

● **MOBILE PHONES**

Apps to innovations to pioneers

● **INFORMATION TECHNOLOGY**

Digital decade delivers huge changes

● **KEY DATA**

Facts and figures

● **STATE OF PLAY**

What is going on across the South?



SouthernInnovator

A magazine celebrating South-South innovation

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Mobile Phones & Information Technology Issue

How these tech tools can aid in the push to meet the MDGs

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the Southern Innovator website
for more content and updates:
www.southerninnovator.org



About UNDP

The United Nations Development Programme (UNDP) is the UN's global development network, advocating for change and connecting countries to knowledge, experience and resources to help people build a better life. It is on the ground in 166 countries, working with governments and people on their own solutions to global and national development challenges. As they develop local capacity, they draw on the people of UNDP and its wide range of partners that can bring about results.

Southern Innovator

Welcome

to the first issue of our new magazine, *Southern Innovator*, profiling some of the most innovative ideas coming out of the Global South that have the potential to change lives. Based on the successful e-newsletter “Development Challenges, South-South Solutions”, produced by the Special Unit for South-South Cooperation in UNDP since 2006, these stories show a vibrant, inventive South that instead of seeing obstacles in the lack of dependable electricity and shortages of telecommunications infrastructure, see opportunities for innovative solutions. These success stories culled from across South America, Asia, Africa and the Middle East profile entrepreneurs, public private partnerships and civil society efforts to meet the challenges of life in the modern world from the perspective of the developing world. This first issue of *Southern Innovator* showcases the transformative role that mobile phones and information technology have played in the developing world over the past decade.

In searching out these stories of development progress that span the globe, we have seen instances where home-grown ingenuity and technologies to solve everyday problems offer real solutions, as in the case of *Maker Faire Africa*. We are also looking for those stories that have far-reaching applicability, as in the case of *Ushahidi*—a crisis-mapping technology developed in Kenya that has gone global. These snapshots of Southern triumphs also show a generation concerned about meeting the Millennium Development Goals and it is our hope that they spur others to action.

In each issue of *Southern Innovator*, you will find stories to inspire the next generation of Southern pioneers and visionaries with contact information included for further follow-up. We have attempted to provide the most current information possible, but given the quick pace of technological change and the inevitable birth and death of private enterprises, this is not always possible. We will continue to update listings on our website: www.southerninnovator.org and are happy to enlist your help as you encounter old or broken links.

Cosmas Gitta
Editor-in-Chief
Southern Innovator
www.southerninnovator.org



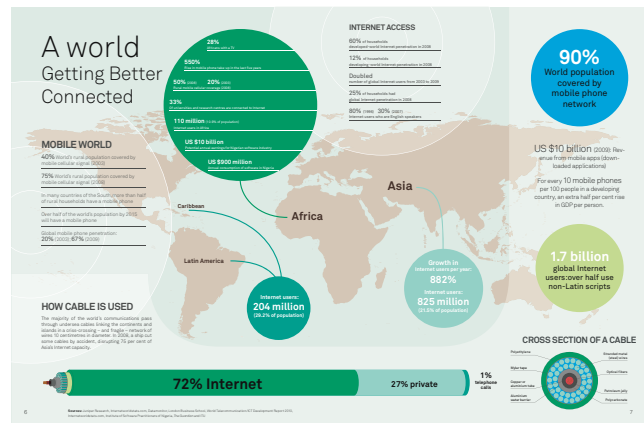
Mobile Phones & Information Technology

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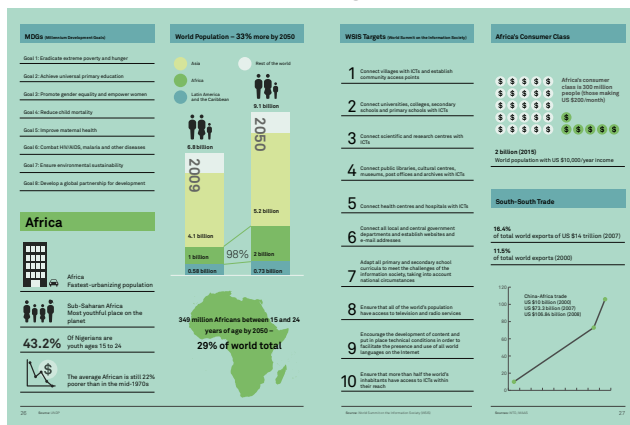
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M-banking
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A world Getting Better Connected

MOBILE WORLD

40% World's rural population covered by mobile cellular signal (2003)

75% World's rural population covered by mobile cellular signal (2008)

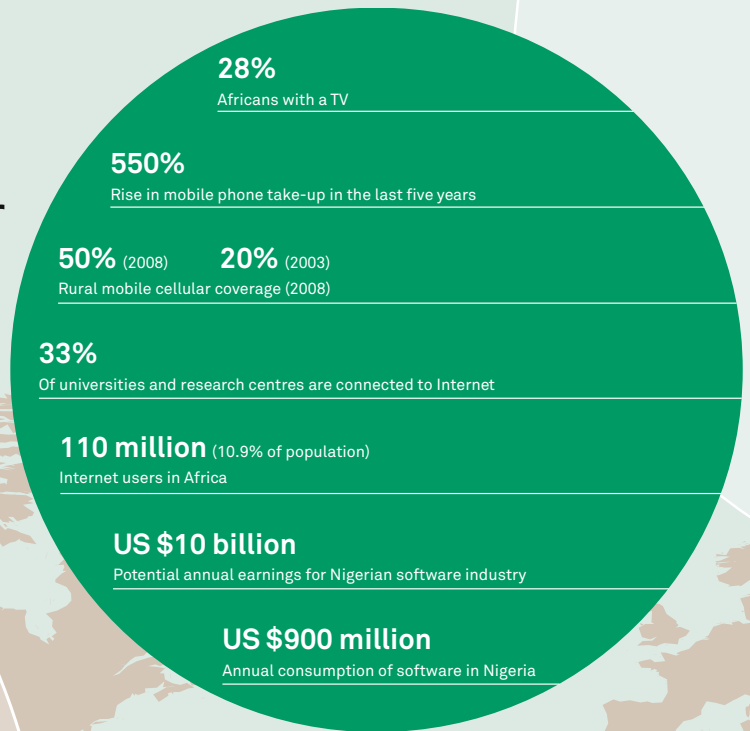
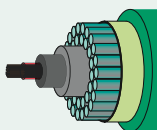
In many countries of the South, more than half of rural households have a mobile phone

Over half of the world's population by 2015 will have a mobile phone

Global mobile phone penetration:
20% (2003); **67%** (2009)

HOW CABLE IS USED

The majority of the world's communications pass through undersea cables linking the continents and islands in a criss-crossing – and fragile – network of wires 10 centimetres in diameter. In 2008, a ship cut some cables by accident, disrupting 75 per cent of Asia's Internet capacity.



Caribbean

Africa

Latin America

Internet users:
204 million
(29.2% of population)

INTERNET ACCESS

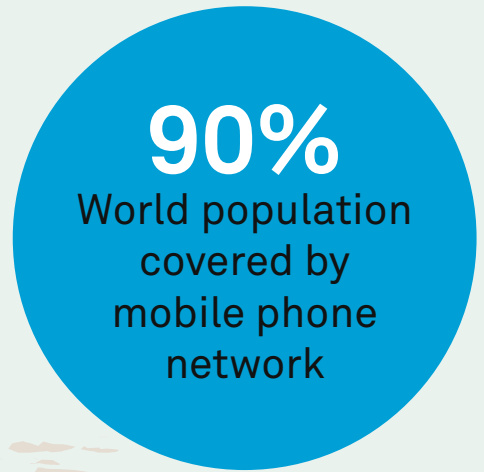
60% of households
developed-world Internet penetration in 2008

12% of households
developing-world Internet penetration in 2008

Doubled
number of global Internet users from 2003 to 2009

25% of households had
global Internet penetration in 2008

80% (1996) 30% (2007)
Internet users who are English speakers



US \$10 billion (2009): Revenue from mobile apps (downloaded applications)

For every 10 mobile phones per 100 people in a developing country, an extra half per cent rise in GDP per person.

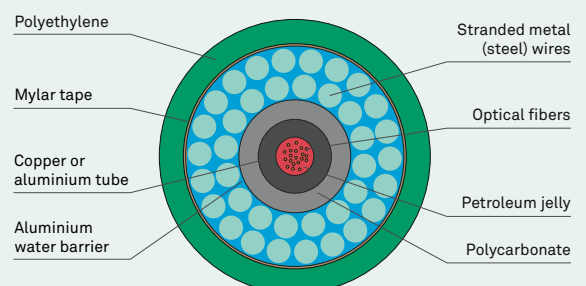
Asia

Growth in
Internet users per year:
882%

Internet users:
825 million
(21.5% of population)

1.7 billion
global Internet
users: over half use
non-Latin scripts

CROSS SECTION OF A CABLE



1%
telephone
calls

Mobile Phones

Intoduction

Sceptics may question the connection between mobile phones and the fast-approaching 2015 Millennium Development Goals. Yet just as so much needs to be done to come close to meeting the Goals (check out a list of the goals at the centre of the magazine), the spectacular take-off of mobile phones across the global South offers a powerful tool for achieving the MDGs.

Read on to find out just how people are creatively deploying this powerful technology to transform their lives and increase incomes.

Millions are discovering income-boosting opportunities tucked inside these powerful communication tools.

Not only are mobile phones becoming a source of income, but they are also critical transactional tools in the South – from the poor to small businesses, to the hurried office worker or the price-savvy farmer timing the markets to get the best price. Or, as the case of Zimbabwe demonstrates, mobile phone payments can be a precious lifeline for families weathering the ravages of hyperinflation. Or, as people found out during the tragic 2010 Haiti earthquake, mobile phones can be a way to call for help and locate friends and relatives.

The number of people paying for goods and services on mobile phones reached 81.3 million in 2009, and it is forecast to leap six-fold to 490 million by 2014 – a dizzying-pace of growth.





Mobile Phones Boost Income

African musicians hoping to support themselves through their recordings have always had to contend with the burden of poor copyright control over their work. While musicians in the West are supported by a highly regulated regime of copyright protection – allowing some to become the richest people in their respective countries – most African musicians have had to stand back and watch their work being copied, sold and exchanged with little chance of seeing any royalties. Global audiences know of the success of artists such as Fela Kuti, Youssou N'Dour, Manu Dibango and Miriam Makeba, but most African musicians can look forward to scant earnings from recording their music.

Anyone who has walked through the markets of Africa will know that there are plenty of pirated CDs for sale, yet they are of no use to a musician who never sees the money. Poverty is endemic among African musicians as a result of this loss of income. While music is a global business worth US \$40 billion according to the Recording Industry Association of America, pirated music in Africa is rampant. Some estimates by the Recording Industry of South Africa put it at over 80 per cent of available music. How much money is being lost can be judged from the estimated daily income of a pirate music vendor in Africa, which ranges between US \$1,000 and US \$3,000.

But a solution to this problem is being pioneered in Botswana in southern Africa. A partnership between mobile phone provider **Orange Botswana** and **Small House Records/Mud Hut Studios** ensures that musicians get a slice of the profit pie. Managing director **Solomon Monyame of Small House Records** has signed a contract with Orange to share the profits from ringtone and song downloads to mobile

phone subscribers. With more than 76.8 million people currently subscribing to mobile phone services in Africa, and the number growing by about 58 per cent each year for the last five years, the potential royalties market for African musicians is vast if this initiative is replicated across the continent.

Well-known Senegalese musician **Thione Seck** is blunt about the economic effect of piracy on his income.

“Were there no piracy, I could have bought an island, seeing the number of songs that I composed in more than 30 years of my career”, he told a local newspaper. – (January 2007)

•**Google Android:** Android is a software for mobile phones that allows people to create useful applications (apps) for the phones.

Website: code.google.com/android and android.com

•**Kabissa:** Space for Change in Africa: An online African web community promoting and supporting the transition to Web 2.0 services in Africa. Offers lots of opportunities to meet people throughout Africa and learn more.

Website: kabissa.org

•**Business Fights Poverty:** Business Fights Poverty is the free-to-join, fast-growing, international network for professionals passionate about fighting world poverty through good business.

Website: businessfightspoverty.ning.com

•**BOP Source** is a platform for companies and individuals at the BOP (bottom of the pyramid) (en.wikipedia.org/wiki/Bottom_of_the_pyramid) to directly communicate, ultimately fostering close working relationships, and for NGOs and companies to dialogue and form mutually valuable public-private partnerships that serve the BOP.

Website: bopsource.com

A Snapshot of Mobile Phone Innovating across the South

Informa Telecoms and Media estimates that mobile networks now cover 90 per cent of the world's population – 40 per cent of whom are covered but not connected.

With such reach, finding new applications for mobile phones that are relevant to the world's poor and to developing countries is a huge growth area. It is estimated that by 2015, the global mobile phone content market could be worth more than US \$1 trillion, relegating basic voice phone calls to just 10 per cent of how people use mobile phones.

The experience of the US \$100 laptops from the **One Laptop Per Child Project** (OLPC) offers an important lesson on

making technology work for the poor: the business model has to come first. In the case of OLPC, the big computer manufacturers are already offering low-cost laptops with extensive software and other support and outselling OLPC. And it is mobile phones that are proving how fast take-up can be if users are willing to pay for the service on offer.

A new report by the **DIRSI** (Regional Dialogue on the Information Society) on mobile phones and poverty in Latin America and the Caribbean unearths the strategies that the poor use to access and use mobile telephony and the





main barriers to increasing usage. It also looks at how mobile phones have improved the lives of the poor.

The poor use them to strengthen social ties, increase personal security, and improve business and employment opportunities. Few share their phones and most own them. The only exceptions are in Colombia and Peru, where the incentive is to share ownership. Most importantly, the study found that mobile phones are not a luxury good but rather the most cost-effective solution to many problems.

India's **Mapunity** is pioneering ways to reduce the stress and anguish of the daily commute to work – something that seriously erodes people's quality of life and affects their health. Owner **Madhav Pai** is using SMS text-messaging technology to improve transportation in Bangalore by providing the **Bangalore Traffic System's** information on bus routes, locations and congestion – all in real time – to mobile phones. The service is free for subscribers to Airtel and at a small cost for others.

The service works by collecting information on cell-phone signal density to build up a map of congestion at different intersections in the city. Tracking congestion has had two benefits: it not only shows where the trouble spots are, but it has also enabled mobile phone companies to know where to place extra relay towers to boost capacity and reduce network overload.

This technology effectively turns the mobile phone into a GPS (global positioning system) mapper, with real-time updates.

The company is incubated at the **N S Raghavan Centre for Entrepreneurial Learning** at the Indian Institute of Management, Bangalore.

In Nairobi, Kenya, computer science graduate **Billy Odera's MoSoko** uses an SMS text bulletin-board system for buying and selling via mobile phones. He got the idea when he had to move out of his university dormitory and needed to sell things to the other students. He was also interested in finding an apartment to share with other newly graduated students somewhere downtown. Tired of sifting through irrelevant ads on bulletin boards, Billy developed an SMS bulletin board system to help connect buyers and sellers in Nairobi. Sellers text into the MoSoko SMS gateway with information regarding the type of item that they would like to sell (a bicycle, TV, couch), their location, and the asking price for the item. This information is stored in a database and can be easily accessed via SMS by potential buyers.

More ingenuity can be found in Fultola, Bangladesh, where a modest Internet café with just four workstations offers Internet access through just one mobile phone. This is all possible because of something called an EDGE-enabled (Enhanced Data Rates for GSM Evolution) mobile phone. One of the computers acts as a web server, while the other three workstations are connected to a small device no larger than a cigarette packet. All of this is wireless and possible because of the EDGE-enabled Motorola clamshell mobile phone using a

USB cable connection to the server. The project is being supported by the **Ndiyo Project, Grameen Phone** and **Grameen Telecom**.

People use the Internet centre to keep in touch with relatives, check market prices, and seek job opportunities or access government websites. The project was coordinated by a team working for the **GSM Association**, the global confederation of mobile phone operators. The aim was to explore the extent to which mobile networks could provide Internet connectivity in developing countries and to demonstrate the extent to which mobile telephony can increase access to online resources.

mPedigree founder **Ashifi Gogo** started his company to use mobile phones to protect people against counterfeit drugs and vaccines. "Buying medicine here is like Russian roulette," said Gogo. "I don't want people to have to choose between a drug that's safe and more expensive and a drug that's cheap and not genuine. Those choices shouldn't be there."

Ghanaian Gogo, a graduate of Dartmouth's Thayer School of Engineering, lets consumers send an SMS to mPedigree to verify if a drug is legitimate while they are thinking about buying it in the drug store or the street market. The consumer types in the serial number found on the drug's packet to a short code (a five-digit number similar to the ones used to top up mobile phone credits). The consumer then receives an SMS response verifying the drug's authenticity. To publicize the service, mPedigree advertises in parallel with existing drug promotion campaigns by

legitimate pharmaceutical companies. It is also getting publicity help from the local mobile phone provider, **Mobile Content in Ghana**.

Gogo hopes to expand the service to Nigeria and Mozambique – and eventually the rest of Africa. He is really enjoying the whole experience of setting up this business: "It's fun!" he said. "It just feels so good doing this work." – (December 2007)

- Twitter:** A way to communicate linking mobile phone communications of up to 140 characters with the web.
Website: twitter.pbwiki.com
- Textually.org:** A very inspiring Website profiling loads of innovations with mobile phones in the developing world.
Website: textually.org/textually/archives/cat_mobile_phone_projects_third_world.htm
- Mashable:** Over 20 tested mobile Internet phone applications that are useful and easy to use.
Website: mashable.com/2008/01/02/20-mobile-Internet-applications
- SME Toolkit:** A free online resource aimed at the South to help entrepreneurs and small businesses access business information, tools, and training services to be able to implement sustainable business practices.
Website: smetoolkit.org

African Technology Tackles Health Needs

Africa is becoming a world leader in mobile phone applications for health and health care. Despite dramatic improvements to the quality of hospitals and the number of qualified doctors, the continent's health-care services are still a patchwork: rural and slum dwellers are poorly served and the stresses of treating diseases such as HIV/AIDS and malaria push resources to the limit.



But innovative inventions are coming along to provide new tools to doctors and medical personnel and better engage patients with remote services.

South Africa's **Afridoctor** (afridoctor.com) mobile phone application claims to be Africa's first personal mobile health clinic. It lets patients use its "SnapDiagnosis" system to submit photos of their ailments and in turn receive advice from a panel of medical professionals, or use the mapping feature to find doctors, clinics and health industry-related services nearby. Afridoctor was conceived to fill the gap across Africa in basic health information that is reliable and trustworthy.

Other features include symptom checkers, first-aid information, health calculators and quizzes. Expert feedback comes within 48 hours.

Afridoctor was developed by the labs of media company 24.com (20fourlabs.com) of Cape Town, South Africa.

"It is more for external use – dermatology – for things such as a bee sting or a snake bite and you don't know what to do or how to diagnose it," **Werner Erasmus**, who created the app, told the BBC.

The "find a doctor" system uses Google Maps to geo-locate local health services including doctors, hospitals and emergency clinics.

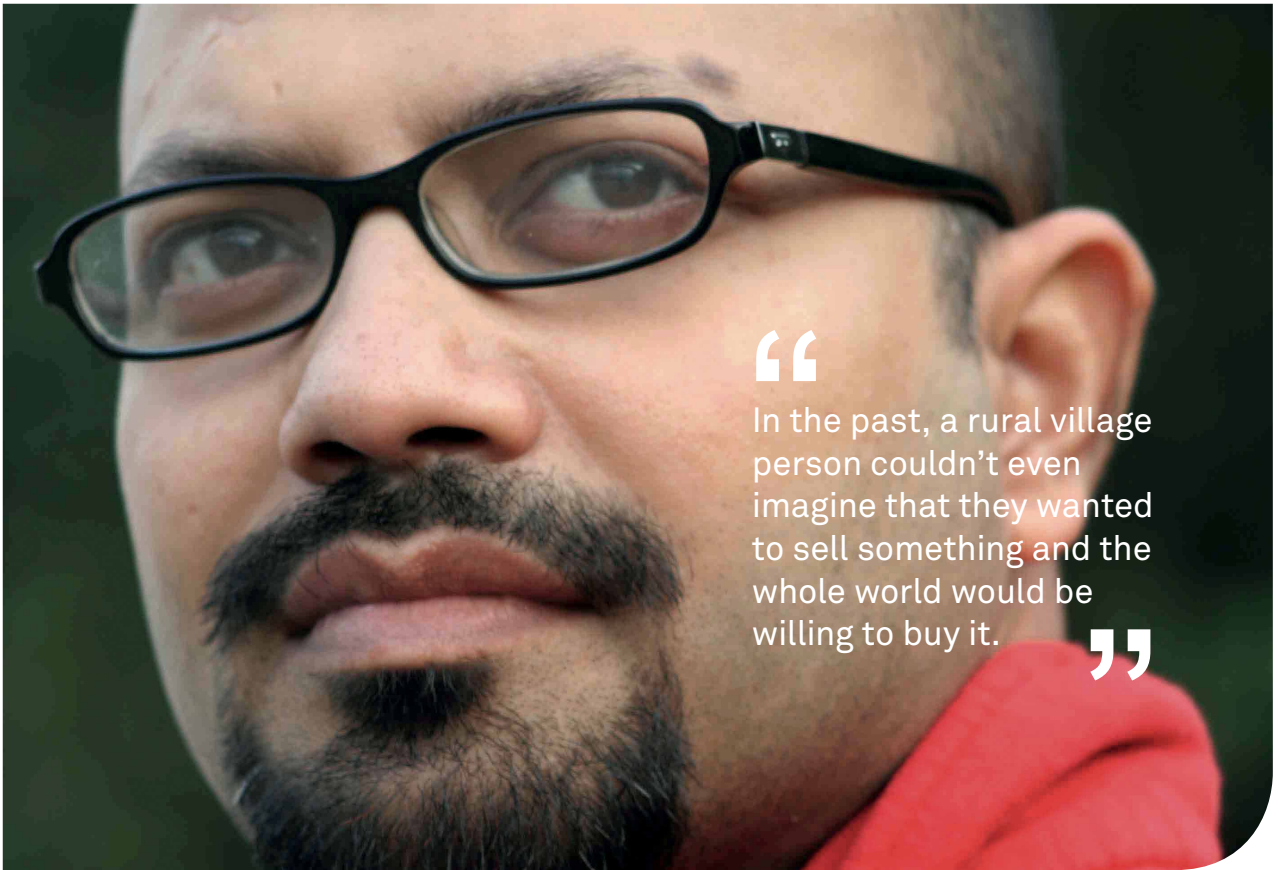
Developed in just three weeks for mobile phone company Nokia's applications contest (calling all innovators.com), Afridoctor won the competition in 2009.

Another mobile application getting attention is Ghana's **mPedigree** (mpedigree.net). Designed to combat the damage done by counterfeit drugs in Africa and across the South, mPedigree lets a person send a text message by mobile phone to the mPedigree service to check a drug's authenticity. A message comes back confirming whether the medicine is authentic or not.

The World Health Organization (WHO) estimates that 25 per cent of medicines sold around the developing world are counterfeit. Some contain no active ingredients, and others are even harmful.

mPedigree is a Ghanaian start-up headed by social entrepreneur **Bright Simons**. Like Afridoctor, it is ambitious and hopes to expand around the world. So far, the mPedigree Network has expanded its work to East Africa. – (September 2010)

- **mPedigree** uses cell phones to build networks to tackle and identify counterfeit drugs.
Website: mpedigree.net
- **AirStrip Technologies:** Securely sends vital patient information electronically to a doctor's mobile phone device.
Website: airstriptechnology.com
- **Instant ECG:** Uses the iPhone to interpret ECG (electro-cardiogram) waves.
Website: instantecg.org
- **iStethoscope:** An application for the iPhone that turns the phone into an electronic stethoscope. Downloaded already by over 3 million doctors around the world, it is being praised for how it helps doctors in remote regions.
Website: itunes.apple.com/us/app/istethoscope-pro/id322110006?mt=8
- **OsiriX:** An Open Source programme for computers and devices allowing doctors to stream medical imaging data live. **Website:** osirix-viewer.com
- **Star Analytical Services:** Have developed an app that allows patients to cough into a phone and receive a diagnosis.
Website: staranalyticalservices.com



“
In the past, a rural village person couldn't even imagine that they wanted to sell something and the whole world would be willing to buy it.
”

CellBazaar's Kamal Quadir

Bangladesh's CellBazaar

Giving the Poor New Market Tools

Bangladesh's poor can now buy and sell goods and services with their mobile phones thanks to a Bangladeshi company's pioneering mobile phone marketplace. The company, CellBazaar, serves as a useful role model for other Southern entrepreneurs and companies looking to develop and market mobile phone applications for the poor that really help them.

CellBazaar is simple to use. A user begins the process by texting the word “buy” to short message (SMS) code 3838. They then are offered a list of all the items for sale and scroll through them to find what they want. When they have found something, they send another SMS. In response, an SMS comes back giving the seller's phone number and from that point, business is under way between the buyer and the seller.

“It's a far more efficient way of finding things. In the past, you had to go to newspapers or magazines, and find the best match,” founder **Kamal Quadir** told **MobileActive**.

The categories run from used cars and motorcycles to new laptops, agricultural products such as corn, chickens and fish, educational tutors, jobs, and places for sale and rent.

Quadir said that he had the idea for CellBazaar when he was a graduate student at MIT, the Massachusetts Institute of Technology in the United States.

“I was surrounded by technologically sophisticated people,” he said. “I saw all this technological possibility and heard one top-notch scientist mentioning that a very cheap mobile phone had the same capabilities as a NASA computer in 1968. A country such as Bangladesh has 35 million NASA-type computers, and most importantly, they're in people's pockets.”

Quadir saw all this power going to waste and realized how business was being held back by the lack of information. Absence of market intelligence – or what is available for sale and what is a good price – was a big impediment to more profitable and efficient business transactions.

“

A country such as Bangladesh has 35 million NASA-type computers, and most importantly, they're in people's pockets.”



Quadir first created the idea at MIT Media Labs and eventually signed a contract with **GrameenPhone**.

CellBazaar launched in July of 2006, and, after a year of beta testing, the team started to actively market the service in August 2007.

Partnering with GrameenPhone, Bangladesh's leading telecommunications service provider with more than 18 million subscribers, had its advantages. With 60 percent of the Bangladesh market, “their network is larger than others,” Quadir said.

Just as web applications such as Google and the powerful social networking website Facebook transformed the way that people work and socialize, so CellBazaar has needed to encourage a change in behaviour for it to work. At first, people didn't think that they had anything worth selling or that they could use the text messages to connect to a marketplace.

“In the past, a rural village person couldn't even imagine that they wanted to sell something and the whole world would be willing to buy it,” Quadir said. “The biggest challenge we have is people blocking that audacity and courage.”

To date, over 1 million people have used the service in a country of 150 million. “Fundamentally, the real

issue is about changing people's patterns,” he said. “But once they learn how to use it, people start doing it really frequently.”

The CellBazaar experience also shows how critical clever marketing is to business success. The company has been marketed through tastefully designed stickers placed in the windows of cars, taxis and microbuses — ubiquitous publicity for low-cost.

CellBazaar also has launched educational booklets for four target audiences: villagers and farmers, the elderly and retired, young professionals, and tech-savvy teenagers. There are detailed booklets for those who want step-by-step instructions as well as short leaflets for customers who want to carry a “quick guide” in their pocket.

CellBazaar launched its first television campaign during the Muslim festival of Eid in 2007. The ads, which featured a newspaper seller called Shamsu Hawker, showed how he begins a new career buying and selling used televisions with the help of CellBazaar. The advertisement's unusual setting on a train as well as positive imagery of Bangladesh created a sensation among TV viewers. The character “Shamsu Hawker” has become a nationally recognized icon and popular cultural figure.

As the service grows, the demographic that uses it has also expanded. “Young people were the early adopters,” said Quadir. “Initially urban people used it more because we didn't market very aggressively. Word of mouth spread faster because of

the higher concentration of people in cities. But now it has spread to rural areas as well.”

CellBazaar has won many awards for its innovation in social and economic development.

The ambitious Quadir wants to expand CellBazaar into East Africa, Eastern Europe and South Asia. Unlike the web, CellBazaar has to make deals with local mobile phone providers. He can't just offer the service through the Internet. “The Internet belongs to everybody — like highways and like fresh air,” said Quadir. “Mobile networks are privately owned.”

“So far the operators we have worked with have been very good,” he said. “We are very selective in terms of what operator we work with.” As CellBazaar looks to expand, Quadir is focusing efforts on places that have high mobile penetration rates and low web penetration. “We're looking at any place that has less Internet. No matter how good the application is, having Internet and high computer penetration doesn't help us,” he said. “And mobile is everywhere.”

– (October 2008)

• **SME Toolkit:** A free online resource aimed at the South to help entrepreneurs and small businesses access business information, tools, and training services to be able to implement sustainable business practices.

Website: smetoolkit.org

• **Textually.org:** a very inspiring Website profiling loads of innovations with mobile phones in the developing world.

Website: textually.org

• **The Innovative use of Mobile Applications in the Philippines:**

Lessons for Africa: A paper from the Swedish International Development Cooperation Agency (Sida) on mobile phone innovation.

Website: tinyurl.com/65kzrkz



Connecting Farmers and Villages with Technology

Creative use of information technology in the South is helping to address two very different kinds of waste – of food and of human and community potential.

In Ghana, a mobile phone-driven Internet marketplace is helping to improve efficiencies in farming and selling food. Another initiative is addressing the crisis in India's villages by drawing on former villagers now living in urban environments around the world.

Finding ways to efficiently trade food is crucial to keeping hunger at bay and meeting the needs of growing populations. In a report earlier this year, the United Nations Environment Programme (UNEP) found that more than half of the world's food is wasted or discarded.

Ghana is a country that has already gained a reputation as an information technology (IT) leader in West Africa. Now a clever technology company based in the capital, Accra, is using mobile phones to connect farmers and agricultural businesses and associations to the marketplace.

By using SMS (short message service) (en.wikipedia.org/wiki/SMS) text messages, information from the field is gathered and collated. This can include tracking what is happening on the farm, how crops are surviving the weather, and the status of food inventories day by day. All the data are collected by the **TradeNet** website and displayed with prices and deadlines for buyers and sellers to get in touch with each other. This reduces the time and cost involved in gathering updates from thousands of people across the country.

Launched in 2007, the service won the Information Communication Technology innovations contest by the World Summit Award (wsis-award.org) of the United Nations' World Summit on the Information Society (WSIS).

TradeNet is currently collating market data from 13 countries and proclaims itself the largest SMS-based market information service on the continent of Africa. It has more than 12,000 registered users and covers 500 individual markets.

The service's full name is TradeNet: Market Information on your Mobile (now called **Esoko**) (esoko.com), and it tracks

products such as ground nuts, sesame, tomato, maize and white beans. It offers market information from Afghanistan, Benin, Burkina Faso, Cameroon, Côte d'Ivoire, Ghana, Madagascar, Mali, Mozambique, Nigeria, Sudan and Togo.

Founded by its chief executive officer **Mark Davies**, TradeNet is run out of the Internet start-up incubator **Busy Lab** (busylab.com) in Accra. Busy Lab specializes in building mobile web solutions for companies and projects involved in rural media and computing.

In India, villages are in crisis: as India's economy has boomed its small towns and villages have withered. Home to the majority of the country's population, they are suffering declining populations and high suicide rates. India's urban slums are where people are going; they are growing 250 per cent faster than the country's population. Yet so many people share some past connection with the country's 260,000 ailing villages.

With more of the world's people living in urban areas than not, it is acknowledged the future for the environment and agriculture still rests in the health of villages.

The social media website **Mana Vuru** (manavuru.com) seeks to connect people living in cities with the villages they were born in, or where their families came from. It is about restoring the broken connection with the village in order to enhance its future development.

As Mana Vuru declares: "Villages form the backbone of

our economy. True progress, growth and prosperity can only be realized when villages become self-sustainable."

The site points out that "most villages are suffering from crippling infrastructure and some even lack the basic amenities such as electricity and fresh water. We believe that every person who migrated to greener pastures and attained success and wealth should feel some sort of moral responsibility and do their bit for their respective villages."

A project of the **Palette School of Multimedia** (palettemultimedia.com) in Hyderabad, one of India's technology hubs, the site lets former village dwellers register and start meeting and connecting with fellow members of the diaspora. Together they can network to help the village address its development challenges. – (August 2009)

• **Afriville** is a Web 2.0 service and an African-Caribbean social network. Afriville is a community Website along the lines of the famous MySpace. Users are free to message and post profiles. The difference is that the user is able to choose how closed or open the networks are. The site features a state-of-the-art music management system which allows African and Caribbean artists to get directly in touch with their fans.

Website: afriville.com

• **Business Action for Africa:** Business Action for Africa is an international network of businesses and business organizations from Africa and elsewhere, coming together in support of three objectives: to positively influence policies for growth and poverty reduction, to promote a more balanced view of Africa, and to develop and showcase good business practice in Africa.

Website: businessactionforafrica.org

• **Model Village India:** An innovative concept to rejuvenate India's villages and build economies and self-reliance.

Website: modelvillageindia.org/index1.html

Indian Traffic Gridlock

Gets Entrepreneurial Solution

Around the world, traffic congestion is often accepted as the price paid for rapid development and economic dynamism. But as anyone who lives in a large city knows, a tipping point is soon reached where the congestion begins to harm economic activity by wasting people's time in lengthy and aggravating commuting, and leaving them frazzled and burned out by the whole experience.

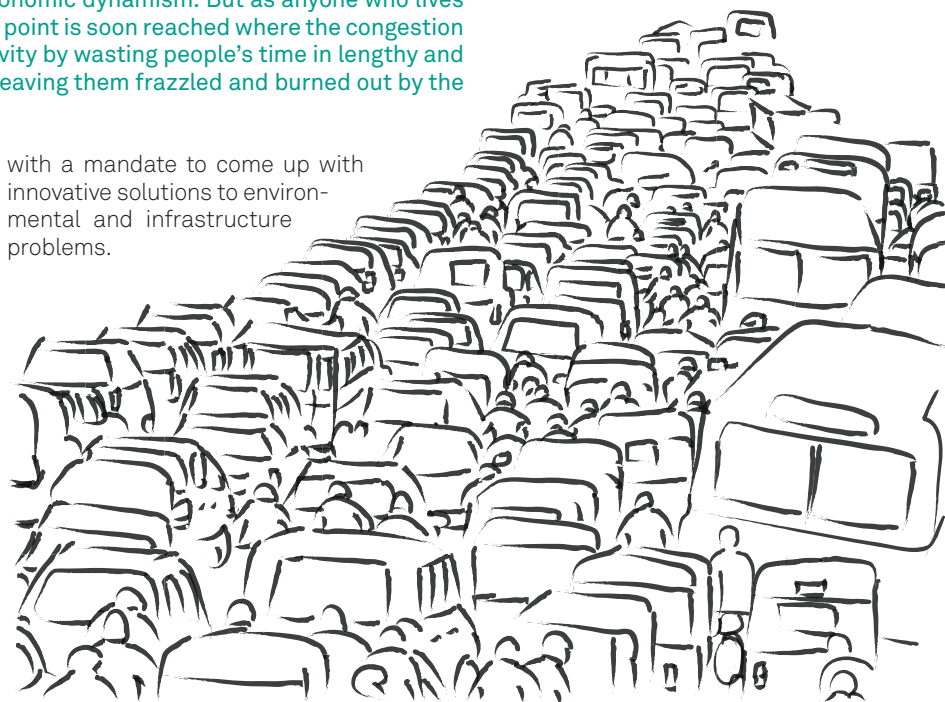
According to the **World Business Council for Sustainable Development**, 95 per cent of congestion growth in the coming years will come from developing countries. Even in developed countries such as the United States, in 2000, the average driver experienced 27 hours of delays (up seven hours from 1980). This balloons to 136 hours a year in Los Angeles.

Projections of future traffic fatalities suggest that the global road death toll will grow by approximately 66 per cent between 2000 and 2020. In economic hotspots, growth is even faster. There has been an increase in fatalities of almost 92 per cent in China and 147 per cent in India.

India's **Koolpool** is stepping in with a 21st-century upgrade to the old concept of carpooling. India's first carpooling service (in which drivers share rides to reduce congestion and save money) uses the power of the country's mobile phone network to link up people by SMS (short message service) text. Already launched in Mumbai, it is being rolled out in other cities as well.

Koolpool surveyed Indian drivers and found that the average car had only two passengers. Koolpool is an idea from the **Mumbai Environmental Social Network** (MESN), a registered charity

with a mandate to come up with innovative solutions to environmental and infrastructure problems.



Its goal is to test "low-cost and high-efficiency IT-based solutions ... With no gestation period and minimal investment, they are profitable and, more importantly for us, people-friendly."

Koolpool claims that an increase from 1.7 passengers per vehicle to 2.04 will decrease travel time and pollution levels by 25 per cent. It also claims to be the first carpooling service to combine SMS text messaging and IT.

Ride-givers send a text message to Koolpool just before going down a major road. Koolpool then sends a list of ride-seekers on the route, their membership identifications, the designated stopping point for pick-up, the number of riders and login time. If there are no ride-givers on a route, ride-seekers are pooled together to get a taxi and share the costs. Members of Koolpool pay an annual membership fee and exchange credits by mobile phone between ride seekers and ride givers, which are then redeemed at gas stations for petrol.

And Koolpool comes at just the right time: congestion in India will probably only get worse in the near term, as the government pledges to build even more roads and make the country's cities "the flyover capitals of Asia". – (June 2007)

• **CommuteEasy** is India's largest carpool network with 15,243 active users. It uses a unique blend of advanced search techniques and social networking to provide the most relevant results.

Website: commuteeasy.com

• **Car Sales India:** Another Indian car pooling business allows people to post requests for rides on an Internet bulletin board.

Website: carsalesindia.com

• **SENSEable City:** A project at the Massachusetts Institute of Technology's SENSEable City Laboratory to use the new generation of sensors and hand-held electronics to change how cities are understood and navigated. This includes creating real-time maps of cities that can then be used to help with avoiding traffic congestion and other problems.

Website: senseable.mit.edu

• **Down to Earth:** Read more about India's traffic congestion problem by India's only science and environment biweekly online newsletter, *Down to Earth*.

Website: downtoearth.org.in

• **Car-pooling initiatives:** Other Indian car-pooling initiatives.

Websites: indimoto.com, carpooling.in and carpool.in



Crowdsourcing Mobile Phones to Make Money for the Poor

The proliferation of mobile phones across the global South, reaching even the poorest places on the planet, has given birth to whole new ways of making money. A phenomenon called ‘crowdsourcing’ – in which the power of individuals is harvested to achieve a goal – is now being used to create networks of people earning extra income.

One technology called **Txteagle** (Txteagle.com) works like this: somebody performs small tasks with their mobile phone, such as translating a document into a local language, and in return receives credits or cash, so-called “micro-payments”. By having many people perform these tasks in their spare time or down time at work a large project can be completed and people can top-up their income. The secret is that the task must be able to be broken up into bite-size chunks: the elephant must be eaten in small bites.

For the poor, or people who are just getting by in a poor country, this can be a much-needed survival top-up in hard economic times. It is also an opportunity for people

normally frozen out of formal employment opportunities or living in slum conditions.

Txteagle is being pioneered in Kenya using text messages or a low bandwidth, interactive protocol known as USSD (en.wikipedia.org/wiki/USSD) (usually used to check prepaid phone balances).

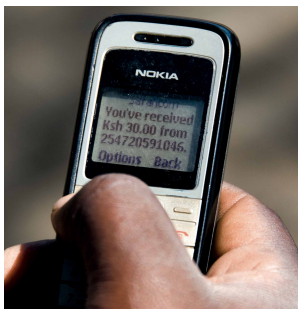
The rapid growth in take-up has made mobile phones the big success story of the 21st century. With such reach, finding new applications for mobile phones that are relevant to the world’s poor and to developing countries is a huge growth area. It is estimated that by 2015, the global mobile phone content market could be worth over US\$1 trillion, relegating basic voice phone calls to just 10 per cent of the way people use mobile phones.

Txteagle is the brainchild of **Nathan Eagle** of **EPROM** (Entrepreneurial Programming and Research on Mobiles) (eprom.mit.edu). He works on developing new mobile phone



applications with computer science departments in 10 sub-Saharan African countries including: the University of Nairobi (Kenya), Makerere University (Uganda), GSTIT (Ethiopia), Ashesi University (Ghana), and the Kigali Institute of Science and Technology (Rwanda). Eagle has pioneered Txteagle in Nairobi, Kenya, with students at the **University of Nairobi**. Drawing on his experience in East Africa, where he has lived since 2006, Eagle has a powerful message about mobile phones in the South. "This is their technology. The mobile phone is theirs," he told a conference in March of this year. "It has had a far greater impact on their lives than it has on ours."

Eagle says typical Txteagle users are "literate people in Nairobi who have significant idle time, like taxi driv-

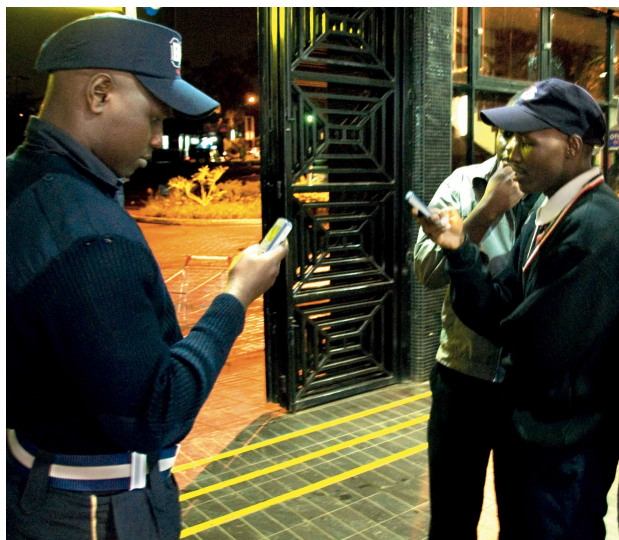


ers, security guards" or high school students. Like many Southern countries, Kenya has a plethora of languages: 62 in all. It can be laborious and costly to translate into all these languages. But by using crowd-sourcing on mobile phones, mobile phone company

Nokia's (nokia.com) phone menus have been translated into 15 local languages.

Already there are more people wanting to earn money this way than there are tasks to do. Eagle has had to cap payments at US \$1.50 a day. The service needs to grow, and it is looking to offer people in the United States the opportunity to have easily broken-up tasks done in Kenya. Eagle believes his algorithms ensure a 95-per cent accuracy rate. One possible market is the US \$15 billion medical transcription industry.

Kenya, a nation of 32 million people relies on its small-business sector for most employment. In 2005, the government's Economic Survey found that the small business-sector created 437,900 jobs – mostly because of the boom in mobile phones. According to the Massachusetts Institute of Technology (MIT), adding an additional 10 mobile phones per 100 people boosts a typical developing country's GDP growth by 0.6 per cent. The boost comes from the innovative use of mobile phone technology by local entrepreneurs.



Kenya is making significant headway on innovating with mobile phones. Already, 30 per cent of Kenyans pay for their electricity with their mobile phones instead of waiting in line.

"We have transformed the majority of phones in East Africa into a platform that people can use to make money," Eagle told the conference. "There are 15 million Africans ready to start working on their mobile phones." – (July 2009)

• **Entrepreneurial Programming and Research on Mobiles:** EPROM, part of the Program for Developmental Entrepreneurship within the MIT Design Laboratory, aims to foster mobile phone-related research and entrepreneurship. Key activities include development of new applications for mobile phone users worldwide.

Website: media.mit.edu/ventures/EPROM/index.html

• Entrepreneurs can track the growth of the mobile phone market here.

Website: wirelessintelligence.com

• **SMS Bootcamp:** The "SMS Boot Camp" at the University of Nairobi, is a project-based course enabling teams of students to launch and market their own SMS services to the millions of mobile phone users in Kenya. A small amount of seed funding will be available to the best teams interested in turning their project into a commercial venture.

Website: media.mit.edu/ventures/EPROM/entrepreneurship.html

• **Crowd-sourcing on Mobile Phones in the Developing World:** Watch a YouTube talk by Nathan Eagle on how this works. **Website:** youtube.com/watch?v=lvz2foChQYU

• **Mobile Active.org:** MobileActive.org is a community of people and organizations using mobile phones for social impact. They are committed to increasing the effectiveness of NGOs around the world who recognize that the 3.5 billion mobile phones provide unprecedented opportunities for organizing, communications, and service and information delivery.

Website: mobileactive.org



M-banking

Leading the Way on Application Innovation

The pace of change in information technology in the South is impressive, and nowhere has it been more rapid than in the take-up of mobile phones. In the past three years China has become the world's largest exporter of information and communication technology (ICT) and home to the same number of mobile-phone users (500 million) as the whole of Europe.

According to India's telecoms regulator, half of all urban dwellers now have mobile- or fixed-telephone subscriptions and the number is growing by 8 million a month. In the United Republic of Tanzania, mobile phone use grew by 1,600 per cent between 2002 and 2008. In Nigeria, it grew by almost 7,000 per cent over six years, from 5 per cent of the population of 140 million in 2002, to a predicted 34.3 per cent by the first quarter of 2008.

But it is the Philippines that has become a global leader in mobile phone commerce. A whole panoply of banking tasks can now be done by mobile phone: transferring funds from one person to another, making small purchases, or paying fees.

"The most significant lesson learned so far," said **Shawn Mendes**, lead author on a report titled *The Innovative Use of Mobile Applications in the Philippines: Lessons for Africa*, "is that m-banking, rather than more altruistic applications such as m-health and m-education, has delivered the greatest benefits to people in developing countries."

Access to basic banking services is vital for the world's poor. The Consultative Group to Assist the Poor (CGAP) found that more than 3 billion poor people lack access to even the most minimal banking services to manage their lives.

But mobile phones have come to the rescue as the fastest growing consumer product in history. Portio Research estimates that between 2007 and 2012, the number of mobile phone subscribers will grow by another 1.8 billion, mostly in emerging economies such as India and China. The Philippines is not alone in introducing so-called m-banking (mobile phone banking). Africa's leaders include the Democratic Republic of the Congo (CelPay), Kenya (M-PESA), South Africa (MTN MobileBanking and WIZZIT) and Zambia (CelPay). "Safaricom's M-PESA in Kenya has grown rapidly from start-up in early 2007 to well over 1 million accounts today," said Mendes. "In May of this year (2008), Vodacom launched M-PESA in Tanzania for their 4 million subscribers in that country. I expect very rapid growth of this service in Tanzania, where less than 10 per cent of the adult population have conventional bank accounts. There are numerous other examples such as CelPay in Zambia and the Congo but I have been watching the success of M-PESA in East Africa most closely."

But the Philippines has taken m-banking the furthest, with two great models for other countries: G-Cash and Smart Money. And the country has shown that it is possible to make these services attractive to the poor, not just the wealthy.

The combination of a good regulatory environment and an atmosphere of innovation brought mobile phone costs down and made this possible. The mobile phone innovations were also successful because they mimicked existing consumer habits of the poor, piggybacking on the extensive retail network of small village shops or "sari sari" stores. Poor Filipinos usually buy "tingi" or "sachets" of products such as shampoo, fish sauce or soap. And it is in these shops that credit top-up centres were set up and prepaid phone cards sold.

Cleverly, mobile phone operators in the Philippines at first offered free SMS (short message service) text messaging. This was key to how m-banking took off. As Smart Money's **Napoleon Nazareno** said, "there must be an existing SMS habit."

This should bode well for Africa, where an SMS habit has taken hold because it is so much less costly than voice

calls. Another important habit was prepayment. People learned how to use pre-pay cards and call numbers and how to enter codes into phones to purchase credits. They learned how to check their credit balance and to electronically load credit onto their phone. This habit made m-commerce much easier and fuelled its growth.

In South Africa, m-banking services are revolutionizing daily life. Hair salon owner Andile Mbatha in Soweto used to have to travel for two hours by minibus to a bank to send money to his relatives. But by setting up a bank account with a service called Wizzit, he no longer needs to keep stacks of cash in his salon (and risk robbery), and he can send money to his sister in Cape Town by phone and receive payment for hair cuts by phone from his customers. "This has taken out a lot of stress," said Mbatha. – (July 2008)

•**Twitter:** A way to communicate linking mobile phone communications of up to 140 characters with the web. These free applications help users to set up the service and link with all their other internet applications.

Website: twitter.pbwiki.com/Apps

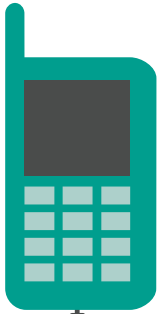
•**Textually.org:** a very inspiring Website profiling loads of innovations with mobile phones in the developing world.

Website: textually.org/textually/archives/cat_mobile_phone_projects_third_world.htm

•**Mashable:** Over 20 tested mobile internet phone applications that are useful and easy to use.

Website: mashable.com/2008/01/02/20-mobile-internet-applications





DIY Solution Charges Mobile Phones with Batteries

There are now more than 3.5 billion mobile phones in use around the world. In the past five years, their use and distribution have exploded across the global South, including in once-hard-to-reach places in Africa. In fact, Africa is the world's fastest-growing mobile phone market. Over the past five years, the continent's mobile phone usage has increased at an annual rate of 65 per cent – twice the rate of Asia.

The world's poor are creative users of mobile phones, adapting these powerful tools to help with business, saving and spending money, and communicating with the outside world. As powerful as mobile phones are, they need electricity to stay functioning. And it is the struggle to find a steady supply of electricity that vexes many in the South.

There are wind-up mobile phone chargers, solar powered chargers, and mobile phone chargers you wave about. But most of these devices are, to someone who is poor and living in the South, expensive and hard to find. So what to do when it is not possible to buy a solar-powered mobile phone charger?

Necessity is the mother of much invention. And one inventing mother is Mrs. **Muyonjo**, a housewife in a remote village of Ivukula in Iganga district, eastern Uganda. She used to ride her bicycle for 20 miles in order to get to the nearest small town with an electricity charger for her mobile phone battery.

If that wasn't a struggle enough, she was deceived one day by a vendor running a village battery charger.

"I will never give my telephone to the village battery chargers again," she told the **Women of Uganda Network** (wougnet.org). "I gave them my new phone for charging, and they changed my battery and instead returned to me an old battery whose battery life can only last for one day."

Ripped off by the vendor and unable to find the money or time to charge the battery daily, she decided to find an alternative charging solution.

"I looked at what was readily available to me and came up with my own charger. I devised this method to enable me to charge my battery every day. It works perfectly."

A simple solution that shows there is no need to be a prisoner of technology, just its adaptor. – (February 2009)

•**Women of Uganda Network:**

An NGO initiated by women's organizations in Uganda to develop the use of ICTs among women as tools to share information and address issues collectively.

Website: wougnet.org/cms/index.php

•**Textually.org:** A very inspiring Website profiling loads of innovations with mobile phones in the developing world.

Website: textually.org



Mobile Applications Market:

Opportunities for the South

As the number of mobile phone users around the world mushrooms, so does the mobile phone applications market. Revenue from downloads of applications, or apps, topped US \$10 billion in 2009, according to market analyst firm **Juniper** (juniperresearch.com).

Applications have two distinct advantages for the poor in the South. Apps targeted at the poor can boost incomes and increase health and education. And they are an emerging way to make money.

Somebody who develops an application can expect to make up to 70 per cent of the download cost. **Apple** (apple.com/iphone/apps-for-iphone) – owner of the iPhone application store – claims it has already given developers over US \$1 billion in revenues.

It is a growing industry. The market-leading Apple App Store now boasts more than 225,000 applications for download and sale. It says they have been downloaded an impressive 5 billion times.

Android Market (android.com/market/#app=com.com2us.HG), run by the search engine **Google**, has more than 60,000 apps on offer. **GetJar** (getjar.com), an independent mobile phone application store from Sweden, says it has 72,000 apps available and has had 1 billion downloads.

Now that the apps economy has been running for a couple of years, it is possible to divine what increases a developer's success. Some believe the apps market-place mimics the dynamics of the music business, rather than the traditional software business.

GetJar chief executive **Ilja Laurs** told *The Economist* that it takes as long to write an app as a song. Apps on average cost about the same as a music download: US \$1.90. And just like the pop music charts, a few become big hits but most never make it. Apps are also a quick hit: even after becoming successful, they can quickly fade back to obscurity. In short, they are fad-and-trend driven and are very much about the moment and a current need. That means that they are wide open to newcomers from the South.

With mobile phones now the main channel for information in East Africa, for example, and mobile penetration exceeding 40 per cent of the population there, vast markets have opened up for apps. East Africa has more than 120 million citizens, with a large majority living in rural areas, many needing poverty-fighting apps to change their lives.

Various new applications show the creative thinking already coming out of the South. In Mexico, the tragedy of migrants dying as they try to cross the border to the United States is

being addressed by Mexican professor **Ricardo Dominguez**, with funding from charities. He has developed an app tool to help people who cross the US-Mexico border find drinking water in the desert, churches with shelter, and human rights groups offering them help. Immigrants download the app – being called a “platform for Migrant Border” – onto their mobile phones.

“The purpose is to provide a platform to travel safely through the desert,” said Dominguez, who led the design team.

App action has heated up in India, where **Spice Mobiles** (spiceglobal.com/SpiceMobiles/SpiceMobiles.aspx) – a wing of the Spice Group – is launching an application store with 250 content providers. India's **Bharti Airtel** launched its first home-grown mobile application store in February of this year – **Airtel App Central** (airtel.in/apps). It clocked up over 13 million downloads in four months.

Jon Gosier, from **Appfrica Labs** (appfrica.net/blog) – behind the highly successful crisis crowdsourcing **Ushahidi** application (ushahidi.com) – explained the thinking behind apps in Africa: “Our goal is to show the world that Africa is capable of solving some of its own problems,” he told CP-Africa.com. “Too often Africans aren't even considered as a resource when discussing how to improve their own quality of life.” He has the following advice for

would-be app developers: “Think global. Too many entrepreneurs here (Africa) think of themselves as competing with peers within their school or country. That's not true. You're competing in the global market now. If your website or web app doesn't look as flashy or polished as the stuff from **37 Signals** (37signals.com) or **Carsonified** (carsonified.com), you've still got work to do.

“You don't get a pass on the web because you're African. You get the challenge of working harder.” – (August 2010)

- **Mobile Active:** MobileActive.org connects people, organizations, and resources using mobile technology for social change.
Website: mobileactive.org
- **Android:** Apps and tools for download.
Website: android.com
- The Innovative Use of Mobile Applications in East Africa by Johan Hellström.
Website: upgraid.files.wordpress.com
PDF: upgraid.files.wordpress.com/2010/06/sr2010-12_sida_hellstrom.pdf
- **Women and Mobile:** A Global Opportunity: A Study on the Mobile Phone Gender Gap in Low and Middle-Income Countries.
Website: mobileactive.org
PDF: mobileactive.org/files/file_uploads/women_and_mobile_a_global_opportunity.pdf
- **New Technologies in Emergencies:** The Role of Information and Social Networks by the United Nations Foundation and Vodafone Foundation Technology.
Website: unfoundation.org/press-center/publications/new-technologies-emergencies-conflicts.html



Two Kenyan Engineering Students Amaze with Inventions

A couple of enterprising Kenyan engineering students showing how mobile phones are an inventor's dream. Their two inventions – one a way to recharge phones while bicycling, the other an aid for catching fish – show the potential for adapting this technology to the needs of the poor.

“

The device is so small you can put it in your pocket with your phone while you are on your bike.”

Kenya has seen lightning-fast growth in mobile phone ownership: from just 200,000 users in 2000, there are now more than 17.5 million people with mobile phones out of a population of 38.5 million.

As powerful as mobile phones are, they need electricity to keep working. The struggle to find a steady supply of electricity vexes many in the South, so finding low-cost or free ways to recharge the phones represents a huge market opportunity.

To tackle this chronic problem, engineering students **Pascal Katana** and **Jeremiah Murimi** of the Department of Electrical and Information Engineering at the **University of Nairobi**, Kenya have invented a device called the “smart charger”. It is powered by the dynamo that is standard issue with most bicycles sold in Kenya. Dynamos on the bicycle's back wheel are little electricity generators that use pedal power to illuminate the bike's lights.

It takes an hour to charge the mobile phone by peddling the bicycle: around the same time it takes to charge a phone using an electricity plug. A one-time charge for somebody can cost up to US\$2 at a recharging service. But the smart charger sells for 350 Kenyan shillings (US \$4.50) – around the cost of two charges.

“We both come from villages and we know the problems,” Murimi told the BBC.

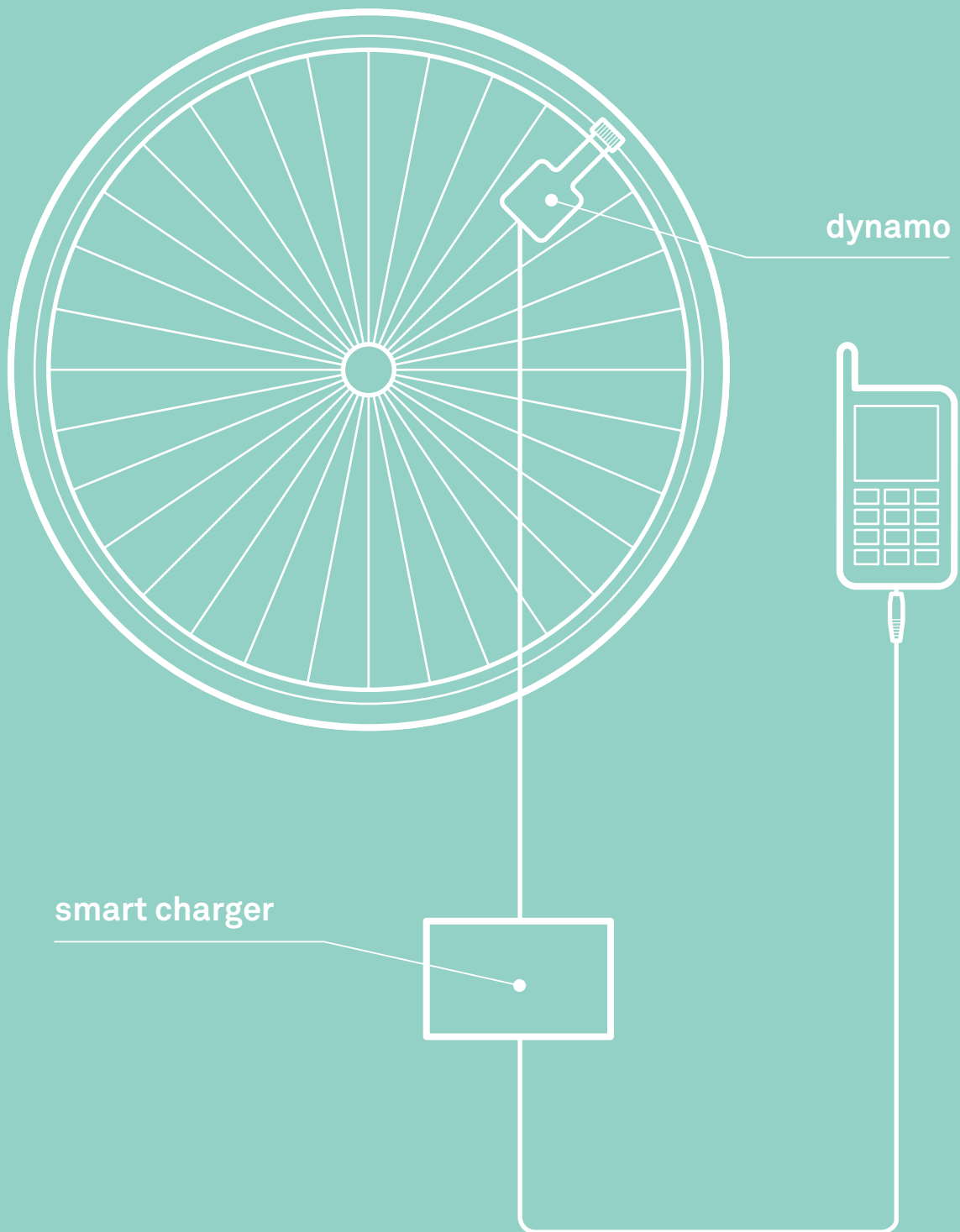
“The device is so small you can put it in your pocket with your phone while you are on your bike.”

The smart charger has been assembled from bits and pieces the duo found: “We took most of (the) items from a junk yard,” Katana said, “using bits from spoilt radios and spoilt televisions.”

Another invention by Katana has adapted a mobile phone to improve fishermen's success, according to **Afrigadget** (afrigadget.com). It amplifies the sounds made by fish as they feed. As the sound is broadcast outwards from the feeding, other fish are attracted to the same place, believing there is more food. A GPRS (General Packet Radio Service) /GSM mechanism in the fishing net is triggered when there are enough fish in the net, and an SMS text message is sent to the fisherman letting him know it is time to haul in the net.

It looks like Pascal Katana can recharge your phone and fill your plate! – (September 2009)

- Entrepreneurs can track the growth of the mobile phone market here. **Website:** wirelessintelligence.com
- SMS Bootcamp:** The “SMS Boot Camp” at the University of Nairobi, is a project-based course enabling teams of students to launch and market their own SMS services to the millions of mobile phone users in Kenya. A small amount of seed funding will be available to the best teams interested in turning their project into a commercial venture. **Website:** media.mit.edu/ventures/EPRM/entrepreneurship.html
- Mobile Active.org:** MobileActive.org is a community of people and organizations using mobile phones for social impact. They are committed to increasing the effectiveness of NGOs around the world who recognize that the over 4 billion mobile phones provide unprecedented opportunities for organizing, communications, and service and information delivery. **Website:** mobileactive.org
- Textually.org** is the entry point of three weblogs devoted to cell phones and mobile content, focusing on text messaging and cell phone usage around the world, tracking the latest news and social impact of these new technologies. **Website:** textually.org
- Ushahidi** is a website that was developed to map reports of violence in Kenya after the post-election fallout at the beginning of 2008. The new Ushahidi Engine is being created to use the lessons learned from Kenya to create a platform that allows anyone around the world to set up his/her own way to gather reports by mobile phone, email and the web – and map them. It is being built so that it can grow with the changing environment of the web, and to work with other websites and online tools. **Website:** blog.ushahidi.com
- Google Android:** Get inventing! This software enables anyone to start making applications for mobile phones. And it offers a platform for developers to then sell the applications to others. **Website:** android.com
- Afrigadget** is a Website dedicated to showcasing African ingenuity. A team of bloggers and readers contribute their pictures, videos and stories from around the continent. **Website:** afrigadget.com





Ushahidi:

Kenyan Application Saves Lives and Inspires the World



In October 2007, UN Secretary-General Ban Ki-moon pointed out the urgent need for interesting and relevant content to attract Africans to the Internet. Official statistics can make for grim reading: the continent has less bandwidth than Ireland.

While it is true that Africa is restricted by serious technological and economic disadvantages, African ingenuity, creativity and hard work are bypassing these impediments to get things done nonetheless. While word has got out about the impressive take-up of mobile phones in Africa, the new world of Web 2.0 is also spawning a new generation of inspiring African technology whizzes transforming perceptions and grabbing the world's attention.

Alongside the combination of innovation and affordability that has made Africa the fastest-growing mobile phone market in the world, there is a home-grown technology boom under way: "African firms are already participating in the forefront of technological developments and investment opportunities," according to the Africa Competitiveness Report 2007.

Powerful and easy-to-use Web 2.0 tools are being used by Africans during times of crisis. Among the most innovative are "mashups" – a term once used to refer to the musical style of combining two or more song tracks that has come to mean the blending together of various software programmes. These Web 2.0 software mashups combine weather information, maps, webcams, population figures, even restaurant locations – in fact, any application that can be easily added to a website. The possibilities are limitless, and this is what is causing so much excitement for development in the South.

In Kenya, a website called **Ushahidi** (Swahili for testimony) used ICT (information and communication technology) and mobile phones to save lives in the post-election violence of 2007-2008. People on the ground could send in live situation reports and alerts through the web and mobile phones to the website, which then mapped violence in real time.

According to the site's originator, **Ory Okolloh**, Ushahidi.com "is a tool for people who witness acts of violence in Kenya in these post-election times. You can report the incident that you have seen, and it will appear on a map-based view for others to see."

The service was put together by Kenyan web developer **David Kobia** (also the developer of **Mashada**, an online African community), and inspired by African blogger **Erik "Hash" Hersman** and other Kenyan bloggers and activists.

At the start of the violence, Okolloh had put out a message for help on the web. "Google Earth supposedly shows in great detail where the damage is being done on the ground," Okolloh said on the site. "It occurs to me that it will be useful to keep a record of this, if one is thinking long-term. For the reconciliation process to occur at the local level, the truth of what happened will first have to come out."

The website came together quite quickly: after initial discussions among the team of five on 5 January, it was live by 9 January. The founders estimate it took 40 hours for development and 20 to 30 hours for testing and promotion.

For others who want to do the same, the key is good relationships, not necessarily technology, the Ushahidi team says. "My advice is to make sure you're well networked with the right people before something like this is needed," said Erik Hersman, who runs **Afrigadget** and **White African** blogs. "By the time you need a site like Ushahidi, it's too late to start making connections, it's time to build ... everyone needs the passion to fulfil the vision of the project."

And to keep it going is not that time consuming, they say. The largest part of their time is spent keeping in contact with NGOs and a volunteer network in Kenya and verifying the information.

"My advice would be to keep things as simple as possible," said Kobia. "Mashups are basically methods of relaying data, so simplicity is absolutely key."

"The feedback has been phenomenal. Ushahidi's graphical representation of events illustrates to some degree the

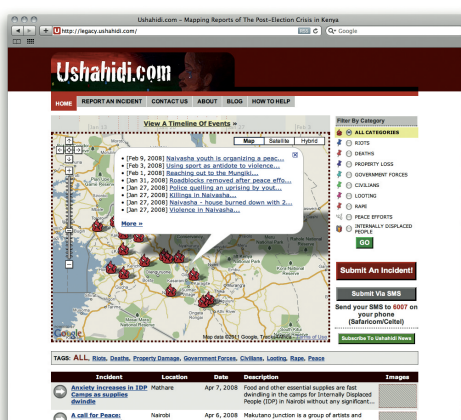
magnitude of the events to people outside Kenya. The enormity of the situation can be understood better as events unfold, keeping everyone in the loop with a point of reference – people tend to become apathetic when regular news moves from the front page.”

Ushahidi has been praised for providing NGOs, the international community and humanitarian agencies with vital information that they can use to help people. Kobia has also launched a new mashup to promote Kenyan unity called **ihavenotribe**.

AfricaNews.com has also been turning to mobile phones to get the news out on the Kenyan crisis. The agency's reporters use Internet-enabled mobile phones with portable keyboards to transmit photos, video and text for reports. All of it is uploaded to the website. Some are calling this the first use of mobile phone journalism in Africa. – (February 2008)

How Does Ushahidi Work?

The Ushahidi platform allows anyone to gather distributed data via SMS, email or web and visualize it on a map or timeline.



- **Pambazuka News Action Alert** blog for Kenya updates.
Website: pambazuka.org
- **Techsoup:** Web 2.0 tools that are free and how to use them: an excellent resource from San Francisco's Techsoup.
Website: techsoup.org
- **Mashups.com** has the latest news and links to get involved in this new Internet phenomenon.
Website: mashup.com
- **Programmable Web:** This outstanding Website links to all active mashups on the web by category and gives real-time reports on progress and lots of links and support to get started.
Website: programmableweb.com



MDGs (Millennium Development Goals)

Goal 1: Eradicate extreme poverty and hunger

Goal 2: Achieve universal primary education

Goal 3: Promote gender equality and empower women

Goal 4: Reduce child mortality

Goal 5: Improve maternal health

Goal 6: Combat HIV/AIDS, malaria and other diseases

Goal 7: Ensure environmental sustainability

Goal 8: Develop a global partnership for development

Africa



Africa
Fastest-urbanizing population



Sub-Saharan Africa
Most youthful place on the planet

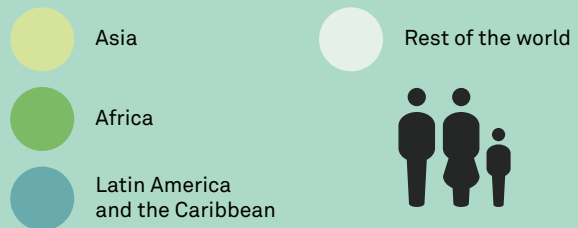
43.2%

Of Nigerians are
youth ages 15 to 24



The average African is still 22%
poorer than in the mid-1970s

World Population – 33% more by 2050



9.1 billion



6.8 billion

2009

4.1 billion

1 billion

0.58 billion

98%

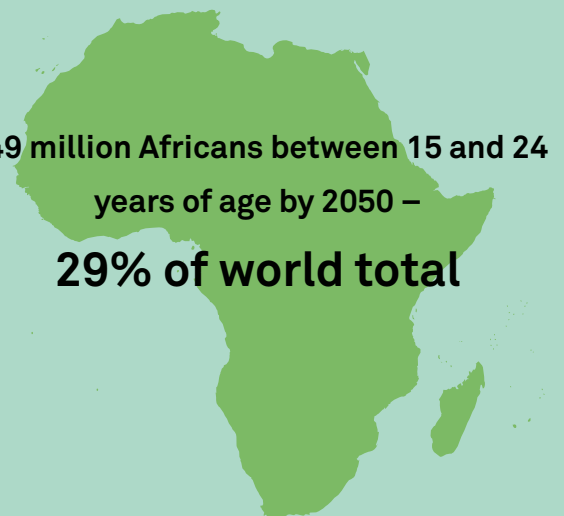
2050

5.2 billion

2 billion

0.73 billion

349 million Africans between 15 and 24
years of age by 2050 –
29% of world total

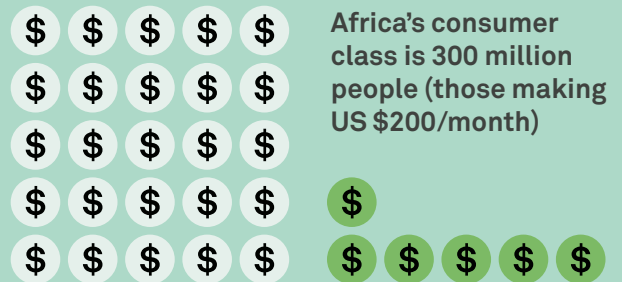


WSIS Targets (World Summit on the Information Society)

- 1 Connect villages with ICTs and establish community access points
- 2 Connect universities, colleges, secondary schools and primary schools with ICTs
- 3 Connect scientific and research centres with ICTs
- 4 Connect public libraries, cultural centres, museums, post offices and archives with ICTs
- 5 Connect health centres and hospitals with ICTs
- 6 Connect all local and central government departments and establish websites and e-mail addresses
- 7 Adapt all primary and secondary school curricula to meet the challenges of the information society, taking into account national circumstances
- 8 Ensure that all of the world's population have access to television and radio services
- 9 Encourage the development of content and put in place technical conditions in order to facilitate the presence and use of all world languages on the Internet
- 10 Ensure that more than half the world's inhabitants have access to ICTs within their reach

Source: World Summit on the Information Society (WSIS)

Africa's Consumer Class



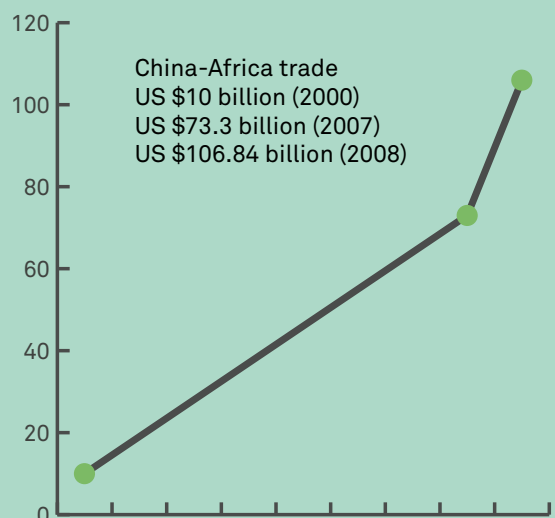
2 billion (2015)

World population with US \$10,000/year income

South-South Trade

16.4%
of total world exports of US \$14 trillion (2007)

11.5%
of total world exports (2000)



Sources: WTO, IWAAS

Information Technology

Introduction

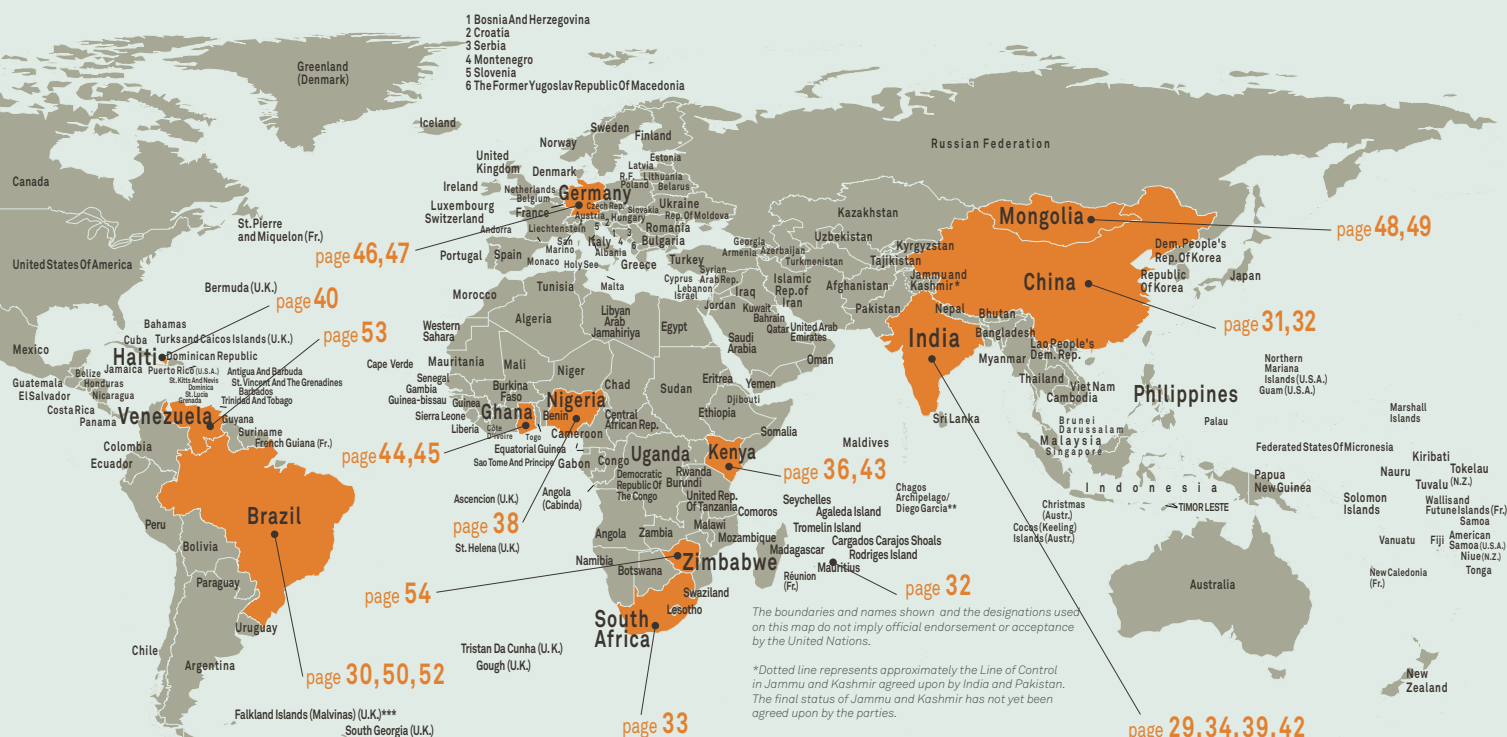
The number of people in the world with access to the Internet is closing in on 2 billion. But this means that the growth of the Internet is going to need to match the dynamism and speed of mobile cellular networks to close this gap. This is the challenge for the next five years.

And as can be seen in the stories collected here, there is plenty of energy and ideas across the South for getting down to work on this project. Where fibre optic cables are not available, ingenious pioneers turn to wireless (WiFi) transmission to connect to the Internet, especially in rural and remote areas.

But important infrastructure is finally coming into place in Africa – a continent long under-served. In 2009, the Seacom undersea fibre optic cable went live linking Kenya, the United Republic of Tanzania, Mozambique, Uganda, South Africa and Rwanda. Where East Africa had to rely on costly satellite services, it can now move into the broadband Internet age.

Greater bandwidth is going to spawn even more business opportunities. Thus in South Africa, pioneers are finding new ways to fund these businesses and grow a start-up culture modelled on the successful Silicon Valley in the United States.

And the ingenuity never fails to amaze: a farmer in Kenya uses the social networking web-site Facebook to improve his potato crop; a pioneer in Brazil uses the Wikicrimes website to help make poor neighbourhoods safer and more attractive for doing business. Others are expressing themselves online and reaching an audience around the world. The Internet becomes a powerful tool in growing the so-called “creative economy”: the economy of the arts, culture, design, software, television and radio, and advertising.



ATM Cash Machines for the Poor

Access to basic banking services for the poor is weak at the best of times. Many poor people are openly discriminated against as a “bad risk” by banks and denied the sort of banking services middle- and higher-income people take for granted. Yet it is a myth that the poor do not have money or do not wish to save and invest for their future or for business.

The so-called bottom of the pyramid (BOP) – the 4 billion people around the world who live on less than US \$2 a day – are being targeted by a wide range of businesses. The late Indian business consultant and professor **C.K. Prahalad**, the man who coined the term BOP, went so far as to claim this is a market potentially worth US \$12.5 trillion in China, India, Brazil, Mexico, Russia, Indonesia, Turkey, South Africa, and Thailand. The World Resources Institute puts it at US \$5 trillion in its report, *The Next 4 Billion*.

India, where 63 per cent of the BOP market is rural and 300 million people are illiterate, makes for a particularly tricky market to reach with bank machines: the average transaction is just 100 rupees (US \$2.12).

But a Madras-based company has come up with the **Gramateller** (vortexindia.co.in/html/gramateller.php) – a low-cost, blue-and-white bank machine custom-designed for the poor and illiterate. **Vortex** received funding of 2 million rupees (US \$48,000) from an investment company, Aavishkar, which specializes in micro-venture capital — small sums for new business ideas. The advantage of micro-venture capital funding is not longer payback time: a young company is not driven out of business by having to pay back the cash before the idea has been realized. Normally, venture capital helps a business to grow quickly but the venture capitalist wants to see an immediate profit on the investment.

Vortex’s chief executive officer, **V.Vijay Babu**, said: “The idea was conceived by Prof. Jhunjhunwala of IITM (Indian Institute of Technology Madras) in the course of an exploratory project focused on using ICT to deliver modern banking services to rural India.”

“It was found that branch-based banking is too expensive to be extended to remote rural locations where the volume and size of transactions are small. Using conventional ATMs (automatic teller machines) as a channel posed many difficulties because these ATMs were not built to operate in [illiterate] environments. Hence the need for developing an ATM specific to this context.”

Costing just a 10th as much to build as an ordinary cash machine, Gramateller has a fingerprint scanner for the illiterate and is able to accept dirty and crumpled bank notes. Vortex came up with an ingenious solution to do this, said Babu:

“Vortex developed a belt-less dispenser design that in many ways mimics the way a human teller would pick and count notes.”

Vortex hopes to massively expand access to cash machines: at present, India has just 30,000 machines, or one for every 43,000 people (the US has a machine for every 1,000 people). These machines are being piloted with India’s biggest private bank, ICICI, and they have garnered interest from Indonesian banks as well.

“We are running pilots for two leading banks with about 10 ATMs,” said Babu. “Though it is still early, the initial response has been very encouraging – rural users find fingerprint authentication intuitive and simple and the ATM convenient and easy to use. A few users also gave feedback that our ATM looks less intimidating, maybe because it is placed in a non-air conditioned room with easy access and also is different in shape from a typical ATM.”

Furthermore the cash machines have taken a beating to see if they are robust enough for rural India: “The ATMs were tested for extended operating cycles under the harshest of environments that would prevail in the rural context — using soiled currencies, operating in non-air conditioned and dusty environments, subjecting the machine to typical fluctuations in line voltages and power outages. User acceptance was tested by enlisting the participation



of rural and semi-urban people to carry out test transactions.”

As for thieves getting their hands on the cash before the poor, Vortex maintains that the machines will not become the victim of thieves: each machine will carry only a fifth of the money of city-dwelling bank machines. – (August 2008)

• **Unleashing India's Innovation:** Toward Sustainable and Inclusive Growth, a report by the World Bank. **Website:** web.worldbank.org

• The report **Global Savings, Assets and Financial Inclusion** by the Citi Foundation is packed with innovative approaches that are allowing the people at the BOP (bottom of the pyramid) to use their income to build assets and more sustainable livelihoods.

Website: newamerica.net

• **NextBillion.net:** Hosted by the World Resources Institute, it identifies sustainable business models that address the needs of the world's poorest citizens.

Websites: nextbillion.net

Brazilian Solar-powered WiFi for Poor Schools

There is a pressing need to spread access to the Internet to the world's poor — but also many obstacles. Often it is something as basic as a lack of electricity that brings progress to a halt. But a Brazilian innovator has come up with a solar power supply that is helping to bring Internet access to schools serving the poor.

One of the most successful ways of rapidly expanding Internet access is to offer wireless (WiFi) Internet so that anyone can use the Web no matter what device they have, whether a laptop computer, a personal computer or a mobile phone. The signals use radio waves and are an excellent solution for multiple users.

Brazilian professor **Marcelo Zuffo**, Interactive Electronics Coordinator at the **University of Sao Paulo**, has invented an inexpensive solar-powered WiFi access point for the poor. Designed to be used by schools without a steady source of electricity, it does not need an outside electricity supply and is not difficult to assemble. It is being tested on lampposts around the Sao Paulo campus.

The device uses something called a “mesh” strategy. By acting as a group, several units are able to expand the area covered by WiFi in a honeycomb pattern. The signal is relayed back and forth between the units, significantly increasing the area covered that can access the Web. “In such a strategy,” said Zuffo, “you can cover large rural areas, parks, low-income neighbourhoods, by just dropping our equipment in roofs, trees or onto existing lamp posts.”

Zuffo was inspired to develop the solar-powered WiFi boxes after the university tried to bring laptop computers to a Sao Paulo school and found that they didn't have a steady electricity supply.

“We came up with the idea of taking energy that is most plentiful and inexpensive, i.e., the sun,” he told the BBC. “We have a solar panel, a low-cost motorcycle battery and a circuit that is responsible for energy management. We can have up to two days of full Internet coverage and our goal is to increase that to 10 days — so that in the rainy season and the winter, you can have the Internet for free.

“The natural plan is to miniaturize the system so that we can save on costs. So by the end, you can imagine these WiFi solar mesh devices being the size of a cellphone or playing card.”

The low-cost, solar-powered access point is ready as soon as it is unpacked and needs neither maintenance nor a power socket to get going.

“It is a completely autonomous WiFi hotspot, it doesn't need any Internet or energy connection,” said Zuffo.

“Everything comes from the sun and we have plenty of that in Brazil,” he said.

Zuffo's message for other scientists and inventors is this: “Innovation, invention is all about transforming people's lives. We need methods and equipment which are inexpensive enough so that they are accessible to virtually every one, suitable for small-scale applications, and compatible with man's need for creativity.”

— (November 2008)

•**Wireless Networking in the Developing World:** A Practical Guide to Planning and Building Low-cost Telecommunications Infrastructure.
Website: ifap-is-observatory.ittk.hu/node/441

•**World Information Society Report 2007:** A progress report on pledges to bring digital opportunity to all.
Website: itu.int/osg/spu/publications/worldinformationsociety/2007/report.html

•**The Wireless Geographic Logging Engine:** This is a website with maps tracking the presence of WiFi access around the globe. Entrepreneurs only have to log into the website to start searching for wireless networks near them.

Website: wagle.net

•**KyaTera:** The KyaTera lab where the technology was developed.
Website: kyatera.incubadora.fapesp.br/portal/research/laboratories/interactive-electronic-media

Computer “Gold Farming”

Turning Virtual Reality into Real Profits

The rapid spread of the Internet around the global South is bringing with it new forms of work. One of these trends is so-called “gold farming”: making money in the virtual world of computer gaming by trading in virtual money, prizes and goods for busy gamers who don’t have time to do it themselves. This work now employs 400,000 people – mostly men and mostly in China, but also elsewhere in the South, according to a new paper.

Working out of Internet centres where they can get access to high-speed or broadband Internet connections, gold farmers use the global trade in virtual goods for online computer games in the same way that stockbrokers trade shares on the world’s stock exchanges. The trade operates similarly to the stock market, with prices fluctuating based on demand and changing by the minute.

And as the report discovered, this trade is acting as a gateway into the world of information-technology employment, where computer-literate young men are able to earn an income that they could not have done otherwise.

It is a trade that can provide gold farmers with US \$145 a month in income. They are often given free food and accommodation to do it, and many have few other economic choices.

“You can probably think of two models,” said the report’s author, **Professor Richard Heeks** of Manchester University’s **Development Informatics Group**. “They could play as an individual at a local cybercafe doing their own in-game farming and then selling to one of the trading sites (that buy from farmers at one price, then sell on to player-buyers at a higher price). Or they could be organized into a small/medium enterprise by an owner, all working together in a room full of computers.”

There is a dark side to gold farming: there have been reports of youths forced to gold farm by gangs who make them work 12-hour days. Crime gangs sometimes become involved and scams proliferate.

Heeks says the down side is the result of governmental ignorance. “The main problem is a lack of understanding about ICT and ICT enterprise generally in some governments in developing countries and in particular a relative lack of understanding about the spread and implications of computer games.”

Supporters see gold farming as a flourishing Southern economy that is worth hundreds of millions of dollars and exposes participants both to information technology skills and to the wide horizons of the virtual computing world. Its defenders

say that it shows that those who dismiss the expansion of IT infrastructure as a waste of time are missing the emerging economic opportunities that it is creating.

Heeks said that we still know too little about this fast-evolving sector but that “gold farming does seem to be providing income/livelihood for young men who would otherwise be unemployed. There are claims that it has helped mop up youths who had otherwise been involved in crime, but we don’t yet know how generalized such claims are.”

The number of players engaged in online gaming has grown by 80 per cent per year, and Heeks sees the rise in gold farming as linked to a bigger trend: “In both North and South, we will spend increasing amounts of work and leisure time in cyberspace. Couple that with the growing penetration of ICTs into developing countries, including into poor communities, and there will be growing opportunities for this kind of ‘virtual outsourcing.’”

Currently, more than 300 million people worldwide have access to the Internet through fast broadband connections (mostly in developed countries although this is changing quickly), and more than 1.1 billion of the world’s estimated 6.6 billion people are online.





China is working hard to capture the economic power of the Internet. The country's economic boom has helped to create an affluent urban middle class clamouring for the social aspects of Internet access such as chat rooms, while the government has been driving the roll-out of Internet access in rural areas.

The country's largest Cyber Park is under construction in **Wujin New and High-tech Development Zone of Changzhou**. It will be a technology incubator, a research and development centre, and a place for small and medium-sized enterprises to innovate.

China's most ambitious digital media industry development is the **Beijing Cyber Recreation District (CRD)**, a collection of digital media academies and company incubators spread over 100 square kilometres, creating the world's largest virtual world development. It is already home to more than 200 game and multimedia content producers in western Beijing. – (September 2008)

- **Goldfarming paper:** The paper in its entirety can be read [here](#).
Website: sed.manchester.ac.uk/idpm/research/publications/wp/di/index.htm
- A website dedicated to showing the current prices for World of Warcraft "gold". **Website:** world-of-warcraft-gold.com
- **Gold Farming:** A documentary looking into all aspects of gold farming and its impact.
Website: chinesegoldfarmers.com
- Stanford University in California hosted the **Virtual Goods Summit 2007** – Virtual Goods, Real Opportunity – and there is a packed Website with video of the talks and details on opportunities to make money in the virtual world.
Website: vgsummit.com
- **The Cyber Cities Reader:** Stephen Graham, editor, *The Cyber Cities Reader*, Publisher: Routledge, 2003. The first book to bring together a vast range of debates and examples of ICT-based city changes.
Website: books.google.co.uk

Cyber Cities: An Oasis of Prosperity in the South

The future is arriving in the South even faster than many think: so-called "cyber cities" are being created to become this century's new Silicon Valleys. Well-known "cyber cities" such as India's Hyderabad and Bangalore have been joined by many other cities across the global South. But two places are set to make big waves with their ambition and drive: Mauritius and China.

Mauritius, an island in the Indian Ocean strategically close to Africa, better known for tourism and luxury hotels, wants to become the world's "cyber island". Armed with the first 3G network in Africa (the third generation of mobile phone technology, offering high-speed Internet access and video telephony), Mauritius is moving fast to make good on this advantage. And it is even moving to the next level of mobile-phone speed, something called High-speed Download Packet Access (HSDPA), allowing even greater quantities of information to be exchanged.

Mauritius joins a select few countries, including Japan and the Republic of Korea, at the forefront of access to 3G. Wireless – or WiFi – computer access is available on three quarters of the island.

Outside the capital of Port Louis, former sugar cane plantations are being turned into a "cyber city". The centrepiece of the development is the 12-story **Cyber Tower**, home to young technology start-ups. The country is also investing heavily in education from primary school to university to make sure that the country's 1.2 million people are cyber-ready.

Mauritius built its wealth on tourism, sugar plantations and textile manufacturing. But it is worried that trading arrangements that helped the sugar and textile industries to flourish will be taken away. So it is focusing on becoming the world centre for computer-services disaster recovery. In the event

of a disaster – manmade or natural – a company can use Mauritius' computing power to get back up and running again.

In China, its largest Cyber Park is under construction in **Wujin New and High-tech Development Zone of Changzhou**, a technology incubator, research and development centre, and a place for small and medium-sized enterprises to innovate.

At the **Beijing Cyber Recreation District (CRD)** – China's most ambitious digital media industry development – a virtual worlds initiative is developing with digital media academies and company incubators. Spread over 100 square kilometres, creating the world's largest virtual-world development, it is already home to more than 200 game and multimedia content producers in western Beijing.

The CRD says its goal is "to create a virtual economy providing infrastructure and platforms through which any

business – not just those based in China – can come in and sell their real-world products and services."

The idea is to create a vast virtual economy for commerce where manufacturers can directly connect with billions of customers, bypassing middlemen.
– (January 2008)

- **The Atlas of Ideas** is an 18-month study of science and innovation in China, India and the Republic of Korea, with a special focus on new opportunities for collaboration with Europe. It is a comprehensive account of the rising tide of Asian innovation. Special reports on China, India and the Republic of Korea, introducing innovation policy and trends in these countries can be downloaded for free.
Website: demos.co.uk/projects/atlasofideas
- **The Cyber Cities Reader:** the first book to bring together a vast range of debates and examples of ICT-based city changes.
Website: amazon.com
- **Innovation China:** A website linking all stories on the fast-breaking world of Chinese innovation.
Website: innovationchina.com

Crowdfunding Start-up Success in Africa

Technology is the future for the South, and South African start-up culture is trying to get a foothold on the African continent and forge a more supportive environment for entrepreneurs and innovators.

Modelled on the successful approaches pioneered in U.S. high-technology centres (en.wikipedia.org/wiki/Silicon_Valley), **Crowdfund** (crowdfunding.co.za) aims to connect start-up technology companies with cash, experience and contacts, helping them get to the crucial prototype stage so that they can go big and go global.

It works like this: in order to build up a fund of cash to invest in start-ups, 1,000 people get together and invest R1,000 (US \$128) into a Crowdfund – a pool of investment cash. A board is set up and uses the pooled cash to invest in between 10 and 20 of the best start-up ideas submitted. The ideas are funded and developed into working prototypes in return for a stake in the business. Once the working prototype is up and running, traditional venture capitalists are approached for further funding and usually Crowdfund will then cash in its equity.

The concept of crowdfunding allows groups of people to use the Internet to pool their money together to help support a person or a cause (wikipedia.org/wiki/Crowd_funding). There are now many variations on the concept, with online services providing crowdfunding for artists, designers, film-makers, causes, scientists and technology pioneers.

As a model for raising funds for small businesses, the concept has a long history in poor communities across the South. Technology in the form of the Internet and mobile phones has helped the concept jump to the next level and has expanded the pool of people who can support a crowdfunded idea around the world.

It is an answer to the need for so-called “angel funding” (wikipedia.org/wiki/Angel_investor): somebody with a great deal of cash who is willing to help a start-up entrepreneur. Crowdfund’s founders felt that South Africa lacked enough angel funders to meet the needs of the country’s technology start-ups. This can be a big problem in countries where there is no history or culture of angel funding and searching far and wide for the “next big idea”.

As broadband technology spreads across Africa, the opportunities for online businesses will just grow and grow. But few will be able to benefit and African start-ups will not stand a chance against global competition if funding is not available to nurture new businesses. – (June 2010)

- **TechMasai:** Pan-African start-up news and reviews. **Website:** techmasai.com
- **Kickstarter:** This new site allows US artists, journalists, entrepreneurs, explorers and others to raise the funds for their next big idea. Anyone with an idea for a new endeavour can post a description of the project on Kickstarter along with a deadline, a funding goal and incentives to encourage others to pledge financial support. **Website:** kickstarter.com
- **AfricaUnsigned:** This African alternative way of producing African music started this year. Unsigned artists record their music, funded by fans. Music fans from all over the world listen to the selection of artists, pick their favorite(s) and chip in a minimum of US \$1 dollar to the recording of a professional EP. The music is then distributed to the fans who backed the artist and sold via all major online stores (including Amazon and iTunes). **Website:** AfricaUnsigned.com
- **Afrinnovator:** Is about telling the stories of African start-ups, African innovation, African-made technology, African tech entrepreneurship and entrepreneurs. Their mission is to “Put Africa on the Map” by covering these kinds of stories from all over Africa. As their website says, “If we don’t tell our own story, who will tell it for us?” **Website:** afrinnovator.com

The Power of the Word: African Blogging Takes Off

“Culture is not a luxury ... Culture is the spiritual backbone of society”: With these words, **Jan Kees van de Werk**, the Dutch poet and long-standing advocate of African literature, summed up the importance of culture to Africa’s development. Two trends could significantly boost the prospects for African writers: an emerging new wave of African bloggers and websites, and the increasing international awareness of African literature. More traditional writing is now being joined by a surge in African blogging. As Internet access has increased and awareness of free blogging websites such as **WordPress** (wordpress.com) has shot up, Africans are jumping online to express themselves.

Blogger **Titilayo Soremi** in Abuja, Nigeria, is typical of the new wave. A business development officer for an NGO, her blog is a vivid snapshot of life in her country. **Obed Sarpong** in Accra, Ghana, is a budding poet and does not shy away from thorny issues. In his current blog, he tackles domestic politics and writes about the on-again, off-again electricity supply.

The Internet age has also given birth to a new phenomenon: the so-called ‘long tail’. This is best explained by **Kelvin Smith** in his paper, “African Publishers and Writers in British and International Markets”: “What now emerges is that more than half the revenue of Amazon is in the “bottom”

2 million books on the list.

“So, the ‘Long Tail’ principle goes, we are now looking at a technology that can service the needs not of dozens of markets of millions, but millions of markets of dozens. This has great significance for the small publisher, whether that publisher is in a large publishing nation or in a country where publishing is a smaller scale activity.”

It looks as if getting creative is not only fun but it can be the next goldmine for Africa’s entrepreneurs. – (August 2007)

- **Kwani** is a lively Kenyan journal of new and young writers. They also organize regular readings and events in Nairobi. **Website:** kwani.org

Dabbawallahs Use Web and Text to Make Lunch on Time

The developing world's fast-growing cities are bringing with them whole new ways of living and working. One rapidly expanding category of citizen is the office worker. A symbol of growing prosperity, the office worker also tends to be a time-poor person who often must commute great distances between home and workplace.

These long commutes mean that many workers have lost the old ability to go home for lunch. This has led to an expanding new field of business: catering to all these office workers' appetites.

Every morning Mumbai's legendary **dabbawallahs** (the name means "box carriers" or "lunch-pail men") fan out across the city to collect freshly prepared lunches from people's homes and restaurants. They then use the transport network to quickly deliver lunches to the customers' workplaces. Once just for the elite, the dabbawallah lunch has become the norm for Mumbai's middle-class office workers. Lunches are packed into small, metal tiffin boxes, ingeniously organized so each component of the meal is sealed in its own section and kept warm.

With a plethora of religious and cultural practices, Indians are particular about what they eat. In Mumbai, there are 200,000 office workers receiving cooked lunches every day delivered straight to their desks. This is done by an army of 5,000 dabbawallahs. While their delivery accuracy was already impressive – only six deliveries in a million go astray – they realized that they had to adapt to the city's rapid changes. In addition to their network using trains, handcarts and bicycles to get the lunches to desks, they have turned to the Internet and mobile phone SMS text messaging to take orders.

It is a 125-year old industry that has grown at the rate of five to 10 per cent a year.

Two trends are accelerating the number of office workers: foreign direct investment (FDI) in developing countries – according to the United Nations Conference on Trade and Development (UNCTAD), it rose by 12 per cent from 2005 to 2006 – and increasing urbanization. Global FDI peaked in 2007 at a record US \$1.9 trillion, falling by roughly 15 per cent in 2008, mostly in advanced economies. Developing countries overall still experienced a slight increase in 2008.

These trends are especially pronounced in India, which is on track to overtake the United Kingdom as the world's fifth-largest economy by 2010, according to the investment banking firm Goldman Sachs.

India's cities are booming. Mumbai is one of the top-five global megacities as well as the world's most crowded metropolis. The dabbawallahs are an excellent example of how a business can move with the times.

A key component in India's new-found success has been a willingness to do things better and become more efficient and the key to this is often information technology. The new technology for the dabbawallahs has been built for them by software engineer **Manish Tripathi** – he has even been adopted as an honorary tiffinwallah.

"When people move to Mumbai for work and need a lunchbox carrier, whom do they ask?" he said. "They ask their friends, or their neighbour. Now, they just need to go to the website and they can find out how to get in touch with us. They can also get in touch with us via SMS."

The move online has been a great success, said Tripathi: "We get 10 to 15 enquiries more a day via SMS and the website." – (December 2007)

• **Dabbawallahs:** The official website of the dabbawallahs
Website: mydabbawala.com



A dabbawallah with his tiffin boxes

Digital Mapping to Put Slums on the Map

Mobile phones are more and more part of daily life in the South's slums – even for the poorest people. One result is that it has now become possible to undertake digital mapping initiatives to truly find out who is where and what is actually going on.

About one third of the world's urban dwellers live in slums, and the United Nations estimates that the number of people living in such conditions will double by 2030 as a result of rapid urbanization in developing countries. How to improve their living conditions and raise their standard of living is the big challenge of the 21st century.

With just over five years until the 2015 deadline to meet the Millennium Development Goals (undp.org/mdg), and the current economic downturn reversing some gains, any tool that can make development decisions more precise must be a benefit.

People are now turning to the growing penetration of digital technologies into slums and poor areas to find solutions. With mobile phones available across much of the global South and plans under way to expand access to broadband Internet even in poorly served Africa, it is becoming possible to develop a digital picture of a slum area and map its needs and population.

Put to the right use, this powerful development tool can fast-track the delivery of aid and also better connect people to markets and government services.

In November, an NGO called **Map Kibera** (mapkibera.org) began work on an ambitious project to digitally map Africa's largest slum, Kibera in Nairobi, Kenya.

The partners behind Map Kibera are **Humanitarian OpenStreetMap**, **JumpStart International**, **WhereCampAfrica**, the **Social Development Network**, **Pamoja Trust**, **Hands on Kenya**, **SODNET**, **UNICEF** and others.

Estimates of Kibera's population range from 170,000 to as many as one million, but nobody really knows how many live there (UN-HABITAT). The slum is typical of such deprived



areas, lacking in health and water resources and plagued by chaotic traffic and housing. Few fully grasp where everything is in the sprawl.

While data do exist on the slum, it is not shared or collated into one source. The Map Kibera project uses an open-source software programme, **OpenStreetMap** (openstreetmap.org), to allow users to edit and add information as it is gathered. This information is then free to be used by anybody wanting to grasp what is actually happening in Kibera: residents, NGOs, private companies and government officials. This will literally put Kibera on Kenya's map.

The mapping team started with 12 young people recruited in Kibera to start the work in November of this year. They will be trained

and also receive support from the growing Nairobi technology community.

“The project will provide open-source data that will help illustrate the living conditions in Kibera,” said Map Kibera’s **Mikel Maron**. “Without basic knowledge of the geography of Kibera, it is impossible to have an informed discussion on how to improve the lives of residents of Kibera.”



Without basic knowledge of the geography of Kibera, it is impossible to have an informed discussion on how to improve the lives of residents.”

Like Kenya, Brazil has a long history of sprawling slums sprouting around its cities. Called favelas, they are complex places, with both rudimentary dwellings and elaborate mansions. Walking into a favela can be a journey through the dreams and aspirations of generations of people, often reflected in their dwellings. Favelas have many services, including hospitals, and there are restaurants and coffee shops. In short, while they are not in the official development plans, the favelas are vibrant economic entities and home to hundreds of thousands of people.

But since they are chaotic and undocumented by official maps, the economic and social development of the favelas is hindered since even basic services such as mail delivery are difficult to provide.

An NGO called **Rede Jovem** (redejovem.org.br) is deploying youths armed with GPS (global positioning system)-equipped mobile phones to map the favelas of Rio de Janeiro. To start with, they are mapping five favelas: Complexo do Alemão, Cidade de Deus, Morro do Pavão-Pavãozinho, Morro Santa Marta and Complexo da Maré.

“The main goal was to mark public-interest spots on a map and show places like schools and institutions and hospitals and restaurants,” **Natalia Santos**, the executive coordinator for Rede Jovem, told **MobileActive** (mobileactive.org). “We wanted to spread the news about what slums do have, so all the people can get to know that the slum is

not just a place for violence and marginality and robbery.”

The mapping process works like this: the mappers physically travel around the favela and upload information on each individual landmark (restaurants, roads, etc.) as they go. They use Nokia N95s mobile phones that are connected to **Google Maps** (maps.google.com).

According to Santos, reporters enter the information on the map displayed on the phone, and they can video or photograph to add more detail. They are using **Wikimapa** (wikimapa.org.br), and **Twitter** (twitter.com) to log the information.

As Rede Jovem recruited young mappers, they discovered an interesting fact: the male reporters (aged between 17 and 25) were frightened to enter a favela with a mobile phone for fear of either being mugged or being stopped by the police. Because of this fact, all the mappers are young women.

They are ambitious for the future despite their funds running out in December. “We want everyone who has a cell phone with GPS to be a wikireporter,” said Santos.

How important it is to the favela residents to be recognized like this can’t be overstated. “I think they are very happy because they’re seeing that they exist,” said Santos. “And the mailman says that now he can deliver the mail.” – (December 2009)

• **Mobile Active.org** is a community of people and organizations using mobile phones for social impact. They are committed to increasing the effectiveness of NGOs around the world who recognize that the over 4 billion mobile phones provide unprecedented opportunities for organizing, communications, and service and information delivery.

Website: mobileactive.org

• **Google Android:** Get inventing! This software enables anyone to start making applications for mobile phones. And it offers a platform for developers to then sell the applications to others.

Website: android.com

• **Betavine Social Exchange** has been launched. It’s a matching site for NGOs looking for mobile solutions, and developers who can help build them, all brought to you by Vodafone.

Website: betavine.net

• **Map Kibera Slideshow:** A presentation on the Map Kibera project.

Website: slideshare.net/mapkibera/ground-truthmapkiberaford

Enormous Potential for Nigerian Software Industry



Nigeria has an unfortunate global reputation as the home of 419 scams (en.wikipedia.org/wiki/Advance-fee_fraud). A typical 419 scam involves sending emails to people around the world in order to extort money from them. Online scams may show an unexpected technical sophistication for a country associated with poverty, but they are a sign that some of Nigeria's plentiful talents are being turned to illegal activities rather than building legitimate businesses.

Many argue that Nigeria is missing its potential to become an African legal software powerhouse. The **Institute of Software Practitioners of Nigeria** said the country's annual consumption of software reached US \$900 million in 2006, making it possibly Africa's biggest market.

"Nigeria stands a good chance of dominating both the local and West African diaspora in a thriving global software market," it argues.

Production of computer software is a major income earner for countries such as the United States and India.

Many argue that Nigeria has enormous potential, if it can address some common problems: an absence of software quality assurance, poor investment in software development, poor product standards and a lack of proper documentation. In short, if Nigeria's software industry takes on board global best practices, then it is sitting on a goldmine of legitimate business opportunities.

Chris Uwaje, president of the **Institute of Software Practitioners of Nigeria** (ISPON), told Business Day that the country's software technology, if well retooled and strategically positioned for global competitiveness, could earn about US \$10 billion annually from foreign software exchange.

He argued that developing the software industry would have many benefits for the population as a whole.

"Software has ... become and will remain one of the fastest-growing industries, with power to enrich and sustain national economies," Uwaje said.

Some estimates put the world software industry and associated markets at US \$1,300 billion, with 90 per cent of the world's software exports coming from the United States and Europe. Outside the U.S., U.K., Germany and Japan, the new and emerging countries within the software industry are India and China, and to a lesser extent Singapore and Malaysia.

According to market researcher DataMonitor, the worldwide software industry grew by 6.5 per cent between 2007 and 2008.

DataMonitor forecasts that in 2013, the global software market alone will have a value of US \$457 billion, an increase of 50.5 per cent since 2008 (DataMonitor's Software: Global Industry Guide).

Africa has a high proportion of entrepreneurs because people have next to no social supports to fall back on and need to do business to survive. Nigeria's large youth population – 43.2 per cent of the total – could be the driver of this new economy if used right.

Nigeria mostly imports software solutions despite having an extensive capacity in software development. If developed well, software could surpass oil as a revenue generator for the country.

According to "A Profile of Nigeria's Software Industry" by **H. Abimbola Soriyan** and **Richard Heeks**, "A typical software company (in Nigeria) had between 11 and 50 customers (the average was 36 though a few firms involved with package installation had several thousand). There was a strong concentration among these customers. Almost all were private sector ... There was a surprising lack of government/public sector organizations as customers (reflected above in the limited number of firms found in Abuja)."

Jimson Olufuye, president of the **Information Technology Association of Nigeria** (ITAN), believes that more needs to be done to support the software developers. And while on paper there is strong support for this sector in information technology policy, "In addition, we need to establish more IT parks with appropriate policies on infrastructure, human resources, incentives and business plan."

Wahab Sarumi, chief executive officer of **Wadof Software Consulting**, explains the problem: "Indigenous software developers are an endangered species, abandoned by the government, neglected by its own people and bullied by the poachers from India, to whom Nigerian businesses rush to buy software applications to solve local business problems." Already, Nigerian software firms are offering existing off-the-shelf software that they custom package with local services. This recognizes that software made in advanced countries isn't entirely right for developing countries, and this is where business opportunities await for software developers.

But the key to success, at the end of the day, is to be the best solution on offer for the right price. **James Agada**, managing director of **ExpertEdge Limited**, believes people buy the best software for the task and don't care where it comes from.

"If you want to sell software, the buyer does not buy the software alone, he buys the software, buys capacity to support the software, buys your capacity to improve on the software. He buys what he assumes is your mastery of the domain of the software ... the software must be able to compete favourably with its competitors."

– (February 2010)

- **West Africa Trade Hub:** A great resource for doing business in West Africa. **Website:** watradehub.com/index.php?option=com_content&task=view&id=1439
- **Rogue Economics:** A website accompanying the book by Loretta Napoleoni on the illegal economic activities unleashed after the fall of communism. **Website:** lorettanapoleoni.com
- **Towards an African E-Index:** SMS e-Access and Usage Across 14 African Countries: A report from 2006 showing how small and medium African businesses increase income with ICTs. **Website:** mobileactive.org/research/towards-african-e-index-sms-e-access-and-usage-across-14-african-countries
- **Changing Dynamics of Global Computer Software and Services Industry:** Implications for Developing Countries: A report from UNCTAD on how computer software can become the most internationally dispersed high-tech industry. **Website:** unctad.org/templates/webflyer.asp?docid=1913&intitemid=2529&lang=1
- **"A Profile of Nigeria's Software Industry"** by H. Abimbola Soriyan and Richard Heeks, Paper No 21, 2004, Development Informatics: Working Paper Series. **Website:** tinyurl.com/yh25dpa
- **Institute of Software Practitioners of Nigeria:** A great contact point for finding legitimate software developers in Nigeria. **Website:** ispon.org

Poor Villagers Get Custom Web Content

In 2003, former UN Secretary-General **Kofi Annan** called for greater access to WiFi, or wireless Internet networks, as a mechanism to help poorer regions catch up with the pace of technological change in developed countries.

Wireless networks remove the need to lay costly wires and can bring fast and convenient Internet access to large populations currently denied access. By removing the need to lay lots of cables to get communities online, wireless could help poorer nations to narrow the digital divide and catch up with countries where the technology has already taken hold. Social entrepreneurs are stepping in to fill the gap between the promise of WiFi and the reality.

A contemporary take on the mobile library, where a bus travels to remote or under-served areas to lend books, is being used to bring WiFi and web content to remote villages in Cambodia, India, Paraguay and Rwanda. **United Villages** and its subsidiary, **First Mile Solutions**, cleverly targets only the

content that the villagers really want and then provides it to them for a fee. Using a fleet of buses and motorcycles, they upload in the city before going to the countryside with popular pages and pages previously requested. "There's only 0.003 per cent of the web that rural Indians care about," founder **Amir Hassan** told the BBC. "They want to know the cricket scores, they want to see the new Aishwarya Rai photos, and they want to hear a sample of the latest Bollywood tunes."

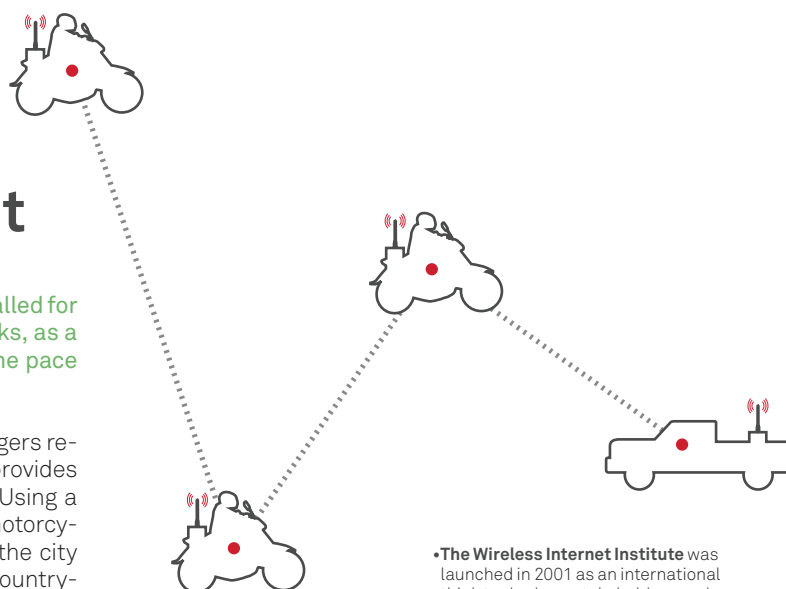
Once in the countryside, a small box with an antenna on board the buses or a motorcycle communicates with any WiFi enabled, stand-alone computer in rural communities, sometimes up to six times a day. Special content requests can be made for a few rupees, and emails

are collected and delivered. Not only do the buses deliver web content, they also act as a courier service, picking up and delivering products ordered via the web for the villagers. "We're bringing e-commerce to rural India," said Hassan.

"My objective is to show to the village youth that having a PC with connectivity is a viable business so that more and more unemployed youth can take this up as a self-employment opportunity," remarks villager **Raj Kishor Swain**, who helps with United Villages.

– (April 2007)

- **The Wireless Internet Institute** was launched in 2001 as an international think tank where stakeholders explore wireless Internet technologies, best practices and sustainable implementation models. W2i is a World Times, Inc. initiative addressing the regulatory, business and integration complexities associated with the deployment of wireless Internet technologies. **Website:** w2i.com
- **The World Dialogue on Regulation for Network Economies** is concerned with regulation and governance for network economies. It conducts research, facilitates online dialogue and discussion among experts, and publishes and distributes papers, reports and other relevant information. **Website:** regulateonline.org
- **I-Genius:** I-genius is a world community of social entrepreneurs and seeks to inspire a new generation of social innovators. They hope to encourage partnerships across geographical and cultural boundaries by building partnerships between social businesses and wider stakeholders, governments, corporations, NGOs, investors and the media. **Website:** i-genius.org
- **Social Edge:** a web portal for social entrepreneurs by social entrepreneurs. **Website:** socialedge.org



Haiti Earthquake Prompts Tech Aid



The devastating earthquake that hit the Caribbean nation of Haiti on 12 January 2010 was a huge tragedy for the country's people and for the large international aid community, including the United Nations. But the disaster has seen the use of new information technologies – often assembled by volunteers – to bridge the gaps in critical information and bring a semblance of order to the chaos of a large disaster. And many of the technologies being used in Haiti now arose from past disasters and crises in the South.

Remarkable stories from the disaster include a woman who used her mobile phone to text message Canadian officials that she was trapped and needed rescue and a filmmaker who used an application on his iPhone (apple.com/iphone) to treat his wounds: "I was able to look up treatment of excessive bleeding and compound fracture, so I used my shirt to tie my leg and a sock on the back of my head and later used it for other things like to diagnose shock," claimed **Dan Woolley** to NBC Miami.

Measuring 7.0 in magnitude (en.wikipedia.org/wiki/2010_Haiti_earthquake), the quake killed over 212,000 people, injured 300,000 and affected more than 3 million out of Haiti's population of 9 million. Hundreds of thousands have lost their homes and are now dependent on food aid to survive. Haiti is the poorest country in the western hemisphere and is ranked 149th of 182 countries on the human development index.

In the aftermath of the earthquake, communications were knocked out and it was difficult to grasp the scale of the disaster. Major infrastructure was either severely damaged or completely destroyed.

The public telephone system went down, and the two largest cellphone providers, **Digicel** and **Comcel Haiti**, were both disrupted. Most radio stations went off the air in the immediate aftermath and a week later, just 20 of the 50 stations in Port-au-Prince were back on air.

This represented the worst of all scenarios for disaster response: not only was the scale of the tragedy enormous, but existing government structures and the large international aid mission were equally badly hit. First responders and the government's infrastructure were paralyzed in the hours after the disaster and it took some time for the aid response to build to significant levels.

But while communications were down in the country, outside it was a different story: people around the world were using the Internet and mobile phones to begin piecing together the e-response to the earthquake.

After the disaster, technology-savvy volunteers around the world kicked into action to find ways to help. They have built software to aid in tracking people, using technology to map the disaster area and mobile phone text messages to find the missing.

Kenya's **Ushahidi** (ushahidi.com) is a free software mashup (en.wikipedia.org/wiki/Mashup_%28web_application_hybrid%29) born after the post-election violence in Kenya in 2007 and 2008. It gathers citizen-generated crisis information – SMS (text messages), email or web resources – and then places the information on a map or timeline. It is put together by volunteers from Ghana, Kenya, Malawi, the Netherlands, South Africa and the United States.

Ushahidi's founder is Kenyan **Ory Okolloh**, and the first version of the software for download is called "**Mogadishu**", after the capital of Somalia.

It was put to use in Haiti (haiti.ushahidi.com/reports/submit) as users populated its online maps and timelines with information on the location of people in need of food and water, those trapped in rubble or those in need of medical attention. It is a real-time reporting system for people in a disaster, offering a way for people in need to broadcast to the outside world.

Sample reports on the timeline look like this (haiti.ushahidi.com/reports): "SOS food, water and care needed in the Bertin Zone of Carrefour S.O.S. for the people of Carefour in the Bertin area, Titus Road, Froide River, these people haven't recieved anything yet like water, food, care."

The UN estimates that there are more than 900 non-governmental organizations operating in Haiti. One of the best

ways to try to coordinate this large aid response is through innovative information technology.

The Ushahidi software has spawned many creative variations to track a wide range of problems. In the Philippines, **TXTPower** (cp-union.com/ushahidi) is put together by the **Computer Professionals' Union** to keep an eye on mobile phone companies and their business practices. In Mexico, a mashup (cuidemoselvoto.org) was put together for the 2009 federal elections. **Stop Stockouts** (stopstockouts.org) keeps track of near real-time pharmacy and medical supplies in health facilities and pharmacies in Kenya, Malawi, Uganda and Zambia.

In San Diego, California, computer programmer **Tim Schwartz** quickly contacted his network of fellow programmers to address the problem of information being spread too widely across many web sources. In a few hours, they put together haitianquake.com, a way for people to post and locate missing relatives.

It was online in less than 24 hours. It was followed by many other similar services, which were merged into a service eventually put together by **Google** called **PersonFinder** two days later. Google's PersonFinder grew to have more than 32,000 missing people listed.

Another response has been **Crisis Camps** (crisiscampmi-ami.org) in London, England, and cities across the United States. Technology workers got together to brainstorm relevant solutions to help the aid effort, and developed tools including **Tweak the Tweet**, **Port Au Prince Basemap** (up-to-date data on what is happening on the ground), **The Haiti Timeline** (developing a real-time history of events as they unfold), **Family Reunification Systems**, crisis wikis (crisiscommons.org/wiki/index.php?title=Crisis_Wiki), **Mobile Applications 4 Crisis Response**, translation (Creole to English for example), **Mapping NGOs in Action** (in the chaos of a crisis, this seeks to track which NGOs are working where), and **We Need, Have Exchange** (a way to post requests for resources or help).

"It really is amazing the change in the way crisis response can be done now," **Noel Dickover**, a Washington, DC-based organizer of the Crisis Camp tech volunteer movement, told *The Independent* newspaper.

"Developers, crisis mappers and even Internet-savvy folks can actually make a difference."

Josh Nesbit is a co-creator of a text message service for mobile phones that is being used by international organizations such as the United Nations and the Red Cross. Haitians are able to send free text messages from mobile phones on

the country's Digicel service. The messages which include requests for water and food, are organized and tagged with key words by volunteers in the Haitian community in New York City, and Haitian radio stations promote the service. It was developed based on similar systems already running in hospitals in Malawi.

In Haiti, mobile phone networks were back up and running within a few days – many within 24 hours. Haiti is poor, but it nonetheless has impressive mobile phone ownership rates: one in three people has one.

OpenStreetMap (openstreetmap.org) is another excellent resource in a disaster and represents a significant step forward in helping people to respond. Real-time data is uploaded to satellite photographs of the disaster area and people then can add updates on the location of working hospitals or where infrastructure has been damaged. The information comes in by many forms, from the micro-blogging service **Twitter** (twitter.com) to eyewitness reports.

Reports from Haiti have talked of rescue teams uploading the maps to their GPS (global positioning system) devices for easy access, or printing then in A4 form to carry around.

The utility of this service has been confirmed by many working on helping Haiti. "We have already been using their data in our initial post-disaster needs assessment," **Stuart Gill** of the World Bank told *The Independent*. – (February 2010)

- **SMS activism:** A blog report on how people are using SMS text messaging in the developing world.
Website: guardian.co.uk/katine/katine-chronicles-blog/2010/feb/02/mobile-phone-sms-uprising
- **Popular Mechanics :** The magazine *Popular Mechanics* has excellent resources on how anyone can prepare his/her family and community for disasters.
Website: popularmechanics.com/survival
- **The US Government** has extensive resources online on how to prepare for a wide variety of natural and man-made disasters.
Website: fema.gov/areyouready
- **UNICEF:** Community-Based Disaster Preparedness Projects (CBDPs) in India have been helping communities restructure to survive when disaster strikes.
Website: unicef.org.uk/campaigns
- **Crisiscommons:** How to activate support from the global technology community in a disaster.
Website: crisiscommons.org
- **Telecoms Sans Frontiers:** Focuses on providing communications in the first days after an emergency.
Website: tsfi.org
- **InSTEDD NGO:** InSTEDD's mission is to harness the power of technology to improve collaboration for global health and humanitarian action. An innovation lab for tools designed to strengthen networks, build community resilience and improve early detection and response to major health-related events and natural or human-caused disasters.
Website: instedd.org
- **Web mash-ups:** Programmable Web offers all the resources required to get started.
Website: programmableweb.com

Illiterate Get Internet at Touch of a Button

Quick access to information is crucial for development. The remarkable spread of information around the world via the Internet has been one of the greatest achievements of the 21st century. The astounding take-up of mobile phones is another. For those who can afford it or get access to a computer and electricity, the new technology is a powerful tool for economic and social advancement. But what about people who are caught in the technology gap, or who are illiterate?

What about those who have a mobile phone but are too poor to own a computer – or live in a village without electricity? Or those who can't read or write? In India, there are 42 million Internet users, 3.7 per cent of the population. But the country is also home to the largest number of illiterate people in the world: 300 million.

A unique solution in rural India is being developed to connect the illiterate to the Internet. The **Open Mind Programme's Question Box Project** opened its first box in the village of Phoolpur in September 2007.

The idea is brilliantly simple. An intercom-like white tin box with a phone inside is placed in a village's public areas. Powered by solar energy and using existing mobile phone networks (the telephone network proved too unreliable), the user just has to hit a simple button to get an operator at the other end. The operator sits in front of an Internet-enabled computer. The users ask their question, and the operator turns these questions into search queries. When the computer's search engine gives back answers, the operator selects the best one and then replies in the user's native language and in layman's terms.

The operator's role goes beyond simply typing questions into Google – the operators use intelligent software that aggregates frequently asked questions (FAQs) to speed up reply time. FAQs include: school scores, job opportunities, football/cricket scores, and definitions and terms. Operators will also send emails for the users.

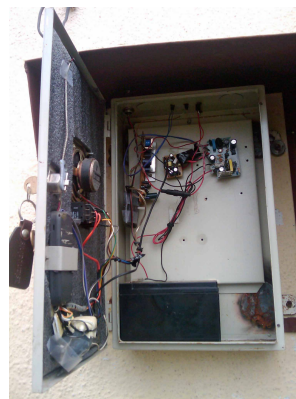
The service also has a role to play for the literate who lack Internet access. Students once had to travel to get their exam results, but now they can just ask the Question Box.

The Question Box operates during normal business hours. A second Question Box went into operation at the beginning of 2008 in the village of Ethida, several hours' drive from New Delhi.

At present, organizers are looking into raising revenue for the service by advertising and sponsorship. Operators are typically homeworkers and well-educated. Mostly female, their



A Question Box in action: the Box uses simple pictographs to help users



Inside a Question Box

relationship between distance from a big city and decreasing quality of education, a graphic example of the damage done by being cut off from good information resources.

The Question Box is based on an idea from **Rose Shuman**, a business and international development consultant. Shuman had become frustrated that with all the clever people and vast sums of money going into information technology, few were developing low-cost ways to take the power of computers to the people.

"The best thing about this project is that it's very tangible," she told the *Daily Telegraph* newspaper. "It's not a big infrastructure. You have a box you can see and touch, and a call log of every question." – (April 2008)

parents are happy to have them work from home.

During this first phase, the project team analysed the results and refined the structure of the service. They are also exploring viable business models to be able to take the service across India and keep it sustainable.

Professor of Psychology Ritu Dangwal from the NIIT Institute is in charge of working with the villagers to monitor the project. She is also involved in a start-up called **Hole in the Wall**, which provides Internet kiosks to rural villagers. Dangwal's research has correlated the

•**Slideshow:** Photographs of the project launch and the Question Box.
Website: flickr.com/photos/73495762@N00

Kenyan Farmer Uses Internet to Boost Potato Crop

The rise of social networking websites during the past few years has swept across the Internet. In Africa, there are more than 67 million people with access to the Internet – just over 6 per cent of the population. And this phenomenon has even begun to penetrate and influence life in poor places with weak Internet infrastructure. A farmer in Kenya, Zack Matere, has boosted his potato crop by turning to Facebook (facebook.com) for help. On his farm in Seregeya near Eldoret, Kenya, Matere used the Internet to find a cure for his ailing potato crop.

“I cycled 10 kilometres to the local cyber café, Googled (google.com) ‘potato disease,’” he told the BBC, “and discovered that ants were eating the potato stems.

“I checked again and found that one of the solutions was to sprinkle wood ash on the crop.”

Matere also used the Internet to find a buyer for his rescued crop and has been able to triple the price he gets for tree seedlings that he sells.

Zack believes he is a bit of a pioneer: “I think I am the only

farmer in the area who uses the Internet.”

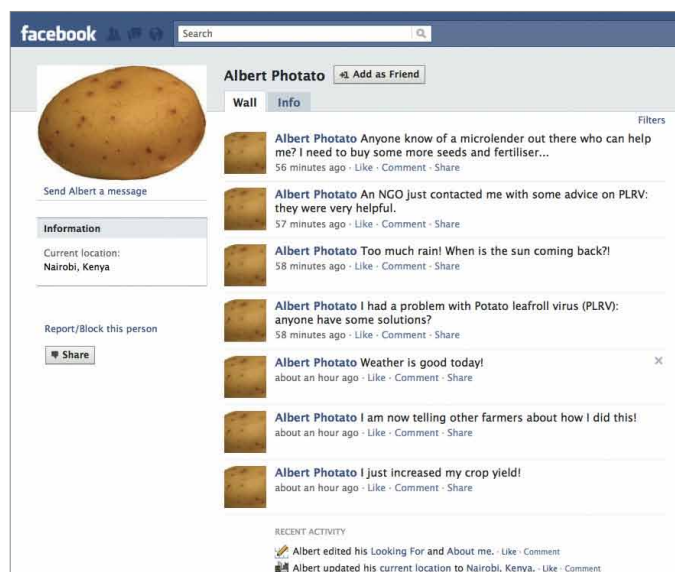
He uses his mobile phone to access the Internet and it costs him about US 0.66 cents a day to do it.

This is a lot of money for small-scale farmers so Zack has a plan to tackle the cost. He will share the information he uncovers on the Internet with other farmers in the community by posting it on local community notice boards.

One example of the kind of intelligence Matere is able to glean from the Internet is reports of cartels deceiving farmers by buying potatoes in overly large 130 kg bags instead of 110 kg bags. Matere takes this information and translates it into Swahili and posts it on community notice boards.

He has also discovered that there are more profitable ways to make money for farmers.

“There is a lot of money in tree seedlings or bee hives. So if we can get these young people to use the land in an environmentally (friendly) way, they can get even more money than through farming.”



“I have 400 Facebook friends and I think some of them can buy the honey.”

Matere is philosophical about the future: “I am now seeing the practicality of the Internet here in rural Kenya. ... Once it is made simpler and is more in the local language with more local content, people are going to access the Internet here,” he predicts. – (April 2010)

• **Social Networking:** A blog with news and tips on how to use the Social Networking tools for business opportunities.

Website: socialnetworking-weblog.com

• **Bnet:** Four stories on how social networking radically improved business prospects for some people.

Website: bnet.com/2403-13070_23-219914.html

• **A Business Week** article on the good and bad of social networking for business.

Website: businessweek.com/smallbiz/content/aug2008/sb2008086_346094.htm

• **Txteagle:** A service in Kenya that is paying people to do tasks and translations with their mobile phones.

Website: txteagle.com

Maker Faire Africa:

African Ingenuity Sparking Creativity

The tide of science and innovation from the South is grabbing the world's attention. While the big giants of India, China and Brazil are well-established hubs of invention, it is the once-overlooked continent of Africa that is generating excitement. The atmosphere can be equated to the flush of innovation in the late 19th and early 20th centuries as inventors tackled the budding new technologies of the combustion engine, flight, electricity and radio waves. These days, it's the challenges of development, rapid urbanization and finding ways to "hack", like adapting existing technology such as mobile phones or bicycles to new purposes.

That previous period of invention had a spirit of pioneering and making-do, of dreams and adaptability triumphing over poverty, and it laid the path for many new companies to sprout up and create wealth and jobs for millions. At this August's **Maker Faire Africa** gathering (makerfaireafrica.com) in Accra, Ghana, African pioneers in grass-roots innovation offered inspiring inventions. The rapid changes happening in African countries – especially the shift to having a larger urban population than a rural one – means there is an urgent need to boost incomes. Handled right, these grass-roots inventors could grow to become part of the already-expanding

South-South trade, which grew by an average of 13 per cent per year between 1995 and 2007, to make up 20 per cent of world trade.

Inspired by the US magazine *Make* (makezine.com) – a do-it-yourself technology magazine written by makers of computers, electronics and robotics – the first Maker Faire gathering was held in 2006 in the San Francisco area of the United States.

The African Maker Faire modelled itself on this approach and has tapped into Africa's well-entrenched do-it-yourself development culture. It went looking for more inventors like those celebrated on the website **AfriGadget** (afrigadget.com), with its projects that solve everyday problems with African ingenuity. The Faire works with the participants to share their ideas and to find ways to make money from their ideas.

The Faire in Accra ran in parallel with the **International Development Design Summit** (2009.iddsummit.org), which came to Ghana from its home at the Massachusetts Institute of Technology (web.mit.edu) in the United States. Its aim was to bring technology closer to "potential end-users of the projects".



"It is part of the revolution in design that aims to create equity in the distribution of research and development resources by focusing on the needs of the world's poor," organizers said.

This spirit of African invention is about changing the perception that invention is a purely Northern phenomenon that requires complex and expensive materials. African ingenuity is about taking whatever is available and tackling common problems. It is an empowering approach that celebrates local initiative and seeks to find ways to turn these inventions into sustainable incomes.

"What's different about African mechanics and gadgets is that they are generally made with much fewer, and more basic, materials," said Afrigadget founder Erik Hersman. "Where you might find a story on how to make hi-tech robots at home in Make, its counterpart in Africa might be how to create a bicycle out of wood. No less ingenuity needed, but far more useful for an African's everyday life."

The African Maker Faire featured a wide range of solutions, from a low-power radio station to a bicycle-powered saw and a simple corn planter.



Shamsudeen Napara, from northern Ghana, brought a US \$10 corn planter that looks like a pill dispenser to help speed up crop planting. He also has invented an inexpensive shea nut roaster. These inventions are cooked up in his metal fabrication shop, which builds tools for agricultural use. Shea nut processing is a lucrative task for women in Northern Ghana. Napara's roaster costs US \$40 and reduces the energy and time to process the nuts. He has also made a soap cutter using piano wires and guitar screws. **Bernard Kiwia**, a bicycle mechanic from Arusha, United Republic of Tanzania, is a pioneer working with windmills, water pumps, mobile phone chargers and pedal-powered hacksaws – all made from old bike parts. **Hayford Bempong, David Celestin and Michael Amankwanor** from Accra Polytechnic (accrapolytechnic.edu.gh) built a low-power radio station. Made from scrap electronic parts and an antenna from copper pipe, the radio was put straight to use to broadcast announcements at the event over a range of a few thousand metres. **Suprio Das, Killian Deku, Laura Stupin and Bernard Kiwia** brought a method to produce chlorine from salt water and other common materials. It can then be used to purify water. Their method can clean vast quantities of water using no moving parts (avoiding breakdowns). It does this by dripping chlorine into the water until a certain level has been reached, and then the purified water is released. By using a 5 litre bag of chlorine, and a US\$3 valve, 100,000 litres of water can be purified.

A group called **Afrobotics** (afrobotics.com) gave a presentation to encourage more African students to go into engineering, science and technology.

Afrobotics is set up as a competition to "fuel engineering, science, innovation, and entrepreneurship on the African continent, utilizing robotics." They have some excellent videos of African robots in action (afrobotics.com).

– (August 2009)

• **Fab Labs:** Like the futuristic "replicator" in the TV show Star Trek, Fab Labs allow people to design and produce what they need there and then. The labs are mushrooming throughout the South as people get the innovation bug. The Fab Lab programme is part of the MIT Center for Bits and Atoms (CBA), which broadly explores how the content of information relates to its physical representation.

Website: fab.cba.mit.edu

• **id21 Insights:** A series of articles by the UK's Institute of Development Studies on how to make technology and science relevant to the needs of the poor.

Website: id21.org/insights/insights68/art00.html

• **eMachineShop:** This remarkable service allows budding inventors to download free design software, design their invention, and then have it made in any quantity that they wish and shipped to them: Amazing!

Website: emachineshop.com

• **Institute for the Future:** It identifies emerging trends that will transform global society and the global market-place. It provides insight into business strategy, design process, innovation, and social dilemmas. Its website helps budding inventors to identify new areas of invention. **Website:** iftf.org

• **Red dot:** The red dot logo stands for belonging to the best in design and business. The red dot is an internationally recognized quality label for excellent design that is aimed at all those who would like to improve their business activities with the help of design.

Website: red-dot.de

Making the World a Better Place for Southern Projects

Good ideas are plentiful, but how to fund life-improving projects has always been a thorny issue. Judging how effective a project is can also be fraught with debate and contention. Over the past two decades, the number of NGOs in the global South has exploded. The best of them offer the local knowledge and understanding required to make development gains. But unlike NGOs in the North, many lack the powerful fundraising capabilities of the big global NGO brands.

An exciting new initiative based in Germany but already featuring hundreds of projects from across the South, is using the power of the Internet to directly connect projects and donors.

Joana Breidenbach, an anthropologist, author and co-founder of **betterplace.org** (betterplace.org), says NGOs are emerging in India and other countries of the South to challenge the big Northern global NGOs.

"Why wouldn't you want to donate to these Southern NGOs? There are more entrepreneurs and local approaches which are better.

"Betterplace gives local institutions a platform to express themselves."

Started in 2007, betterplace is an online marketplace for projects to raise funds. It is free, and it passes on 100 per cent of the money raised on the platform to the projects. The foundation that runs betterplace supports its overheads by offering additional services that people can pay for if they wish. It works in a way similar to the online marketplace eBay (ebay.com): NGOs post their project, set up an account, blog about their achievements and successes and needs, and receive donations directly to their bank account. Breidenbach points out that up to a third of any NGO's income is spent on fundraising. In Germany, that represents more than euro 1.3 billion out of over euro 4 billion in private donations – money that could have gone directly into the hands of the people needing help.

With betterplace, donors can surf through the projects and pick the one they want. Already, more than 100 large corporations trawl through betterplace seeking projects to fund to meet their corporate social responsibility (CSR) obligations (en.wikipedia.org/wiki/Corporate_social_responsibility).

"I find it very exciting to introduce a good and innovative NGO to a corporate sponsor," Breidenbach said.

Breidenbach says betterplace's ultimate goal is "to transfer the donation market online." It hopes to change the rules in donation and charity in the same way that blogs and the search engine **Google** changed the way people publish and search for information.

"This provides better transparency, feedback," Breidenbach said. "Now (with betterplace) donors and organizations can cut out the middlemen. A lot of established organizations do not like this too much."

Over the past decade, new concepts such as social entrepreneurs and venture philanthropy have emerged to straddle the delicate line between social good and private profit. Betterplace joins this wave of new thinking about how to do development better.



Now (with betterplace) donors and organizations can cut out the middlemen. A lot of established organizations do not like this too much."

In the 20 months since betterplace went online, more than 1,500 projects have joined. They are now averaging between 20 to 35 new projects joining every week.

Breidenbach gives the example of a mother in Cameroon who is using betterplace to raise the school fees for her children. The mother blogs about the children's progress and has been able to raise the fees for a year and a half.

"People are now directly connected to somebody in need."

Success on betterplace is by no means certain. "The experience of the project managers has been as varied as development work is. Some have done really well, raising thousands of euros over the website. Others have received no funding at all," Breidenbach said.

But betterplace provides tools to give the projects the best chance possible. "Projects can present their work, breaking it down in a transparent way (in order to let supporters know exactly what is needed for their realization). There are sound payment processes in place and project managers can give feedback through their project blog. Supporters can download project widgets, etc., all supplied free of charge."



Joana Breidenbach at betterplace's Berlin, Germany headquarters

Breidenbach has other tips for making betterplace work for a project "We have the numbers to show that projects which give regular feedback and have a lively web of trust receive more donations than others, that are not very active."

"Don't think you can just go on to betterplace and the money starts rolling in," said Breidenbach.

The betterplace platform places all projects seeking funds on the same level, allowing individuals and small NGOs to compete equally with the big, branded global NGOs with their websites and sophisticated fundraising operations.

"All the big NGOs have their own websites," continues Breidenbach. "But it is the small initiatives that often don't have a website or know how to use Pay Pal, etc. (paypal.com). We are very useful for smaller NGOs."

"Another big advantage is that we are a real marketplace: whatever your interests (as a potential donor), you will find a project tackling this issue on the platform."



Joana works at her laptop

But what about fraud and people seeing betterplace as a coin-making machine rather than a way to make the world a better place?

"We have a feeling for dodgy projects. We check the IP address. We have a number of trust mechanisms in place (and are currently working on enlarging them). Thus projects on betterplace can create trust through their good name.

"If a contributor to a project is dissatisfied with the project's outcome ... she can either directly contact the project manager via betterplace, or openly voice her concern on the project page for other potential donors to see her views."

For now, betterplace is still only useful to people who have access to the Internet and have a bank account (necessary for the money transfers). But in the future, betterplace hopes to have mobile phone interactivity and more features to expand whom they can reach. – (September 2009)

•**CSR Wire:** This is a news service with all the latest news, reports and events and where companies announce their CSR (corporate social responsibility) programmes and how much they are contributing. A great resource for any NGO looking to make a targeted appeal for funds.

Website: csrwire.com

•**Alibaba:** Alibaba.com is an online marketplace started in China but is now global. It allows businesses from all over the world to trade with each other, make deals and find funding.

Website: alibaba.com

Mongolia Looks to Become Asian IT Leader

A Mongolian information technology (IT) company founded by a woman has shown a way to thrive in the country's often-chaotic economic environment. With the global economic crisis moving into its third year, Intec's strategies to survive and thrive offer lessons for other IT start-ups in the South.

While the global economy's prospects are still uncertain, on the positive side, many believe the best place to be is in emerging economies such as Mongolia, with some foreseeing healthy growth for the next 20 to 30 years. Mongolia's information technology entrepreneurs are looking to prove that this is the case. The country has made great strides in improving e-government – jumping from 82nd place to 53rd in the UN (United Nations) e-government survey 2010 (2.unpan.org/egovkb/global_reports/10report.htm) – and is now aiming to become an Asian software and IT services outsourcing powerhouse.

A Northeast Asian nation (en.wikipedia.org/wiki/Mongolia) sandwiched between the Russian Federation and fast-growing China, Mongolia grapples with the combination of a large territory, a small population (2,641,216) and limited transport infrastructure connecting it to its neighbours. Historically, it is a nomadic nation with a strong animal-herding tradition. But during the Communist period, it industrialized and became more urban. After the collapse of Communism at the beginning of the 1990s, the country experienced a terrible economic and social crisis, with rapidly rising poverty rates and high unemployment.

Despite its infrastructure obstacles, Mongolia has been able to develop a lively information technology sector, often with the assistance of the United Nations. During the late 1990s, as the Internet revolution exploded, the UN led in supporting infrastructure, skills development, innovation and legislation.

Information technology consulting and services company Intec (itconsulting.mn), founded in 2004, has been able to thrive through the global economy's ups and downs by identifying an under-served niche as a consulting, research and training company. Intec now has five full-time staff and works with a broad network of Mongolian and international consultants.

As is often the case with new businesses, Intec initially found that many doors were closed to start-up enterprises. "The major challenge which I faced was to make people understand about the consulting services," said Intec's founder, Lkhagvasuren Ariunaa. "The consulting services concept was new to Mongolia and Mongolians at that time and not many organizations were willing to work with consulting services. The international and donor organizations were keen

to work with consulting services companies; however, they were requiring companies to have a list of successfully implemented projects, which was difficult for a new starter like Intec.

"For example, registering with the Asian Development Bank consulting services database required companies to be operational for at least three years. So, we became registered with ADB consulting services database only in 2008. Meanwhile, personal connections and communication skills helped to find jobs and opportunities for Intec."

Ariunaa had worked for the Soros Foundation (soros.org) but it closed its offices in Mongolia in 2004. Faced with unemployment, Ariunaa went about seeing what she could do next, a dilemma many people face in today's economy.

"It took me about eight months to develop a business plan and directions for the operation of the company. I started in a big room at the national information technology park building with one table, chair and computer.

"They have been quite challenging years for bringing a company to the market and finding niches for us. We have franchised the Indian Aptech

WorldWide Training center (aptech-worldwide.com) in Mongolia – may be one of the few franchising businesses in Mongolia. Currently that center is now a separate entity/company and it has over 20 plus faculty staff and over 300 students."

Ariunaa had been active in the sector for over 10 years, but while knowing many of the players and organizations, she spent time researching what niche Intec could fill in the marketplace.

"Looking at the ICT market, there were quite a number of Internet service providers and mobile phone operators and a few companies started developing software applications and services, etc. However, there were only two to three consulting companies in the ICT sector which to my knowledge at that time were providing consulting services, and still there was a room for Intec."

Intec then focused on three areas: consulting services, training and skills, and research. Intec found that they were pioneering a new concept in Mongolia.

Intec's first contract was a job with the University of Milwaukee-Wisconsin in the United States to organize a three-week course for American students to learn about the digital divide in Mongolia. But the global economic crisis hit Mongolia hard in 2009.

"It was challenging to survive and continue working in the



Ariunaa



Ariunaa and Ms. D. Bulgan at work

Ms. Khaliunaa Altangerel,
an Intec researcherMr. D. Munkhtur, an ICT
specialist at Intec

The Intec team

same way," Ariunaa said. "There were few ICT-related jobs in Mongolia at that time, and one of our major clients left Mongolia and we had to find other clients in the market.

"One of the ways of approaching this was that we were not asking for fees; instead we would have a barter agreement: we will deliver them services and they will provide some services for us. For the company itself, we needed to find ways of financing and covering costs for renting of premises, paying salaries for staff on time, paying taxes and other expenses."

The environment in Mongolia is being helped by the **Information and Communications Technology and Post Authority (ICTPA)** of Mongolia (ictpa.gov.mn), which has been driving forward an e-Mongolia master plan. With 16 objectives, it ambitiously seeks to place Mongolia in the top five of Asian IT nations, competing with China, Japan, the Republic of Korea and Singapore.

Ariunaa believes Mongolia has many competitive advantages. "Mongolia is known for a high literacy rate and math-oriented training and education, and ICT specialists are targeting to become a software outsourcing country for other countries. Another advantage of Mongolians is that they can easily learn other languages: we are fluent in Russian, English, Japanese, Korean, German and we believe that

with these two major advantages, we will be able to do a good job with outsourcing of software development."

While men still dominate the ICT sector in Mongolia, Ariunaa has not found being a woman a disadvantage. "In Mongolia, as gender specialists say, there is a reverse gender situation. Women are educated, well-recognized and well-respected. There were situations when I was the only women participant in the meeting with about 20 men. But I never felt somewhat discriminated against or mistreated and I think that's the overall situation towards gender in Mongolia."

Intec's success working with Aptech WorldWide Training's franchising contract brought many advantages for a start-up. "It's a faster way to do things, and you don't have to re-invent the wheel."

As a Mongolian company, Intec has found it best to play to its local strengths. "National companies have knowledge, expertise and experience of local situations, know players and understand about legal, regulatory matters. ... partnership

or cooperation is one of the means of cooperating with big global players."

Intec's success is also down to Ariunaa's enthusiasm: "It's fun and I love doing it – just usually do not have enough time!"
– (July 2010)

- **Business link:** Advice on starting a business and succeeding in tough economic times.
Website: businesslink.gov.uk/bdotg/action/layer?topicId=1073858805
- **Changing Dynamics of Global Computer Software and Services Industry: Implications for Developing Countries:** A report from UNCTAD on how computer software can become the most internationally dispersed high-tech industry.
Website: unctad.org/templates/webflyer.asp?docid=1913&intitemid=2529&lang=1
- **Afrinnovator:** Is about telling the stories of African start-ups, African innovation, African-made technology, African tech entrepreneurship and entrepreneurs. Their mission is to "Put Africa on the Map" by covering these kinds of stories from all over Africa. As their website says, "If we don't tell our own story, who will tell it for us?"
Website: afrinnovator.com
- **TechMasai:** Pan-African start-up news and reviews.
Website: techmasai.com

New Weapon against Crime in the South

Crime in the South's fast-growing cities has a negative effect on economic development and social and community harmony. In Africa, with one fifth of the world's population, data is very poor on crime and its victims. The absence of good data means prevention and detection of crime are poor, and resources to fight it can't be allocated effectively.

Over 900 million people, almost a sixth of the world's population, now live in urban slums – high-tension places that offer a fertile environment for crime to flourish. In developing countries, 43 per cent of urban dwellers live in slums – and in the least-developed countries, the figure is 78 per cent. Keeping these areas safe is a serious challenge, especially when trust in police and local authorities is low. People are often afraid of how police will react to reporting of crime. Many rightly believe that they will be asked for a bribe or that reporting a crime somehow singles them out as a troublemaker.

Harnessing the power of people organizing together offers one way of fighting back against crime and combating the paralysis of feeling there that is nothing that can be done. An initiative in Brazil is turning to the powerful collaborative potential of Web 2.0 to track crime and help to solve it. And for the first time in history, Brazilians can now see in more or less real time what crime there is and where it is happening in their country.

Wikicrimes, the brainchild of Professor **Vasco Furtado** of the University of Fortaleza's **Knowledge Engineering Research Group**, is inspired by the very popular user-contributed encyclopaedia **Wikipedia**, and germinated in his mind while on an academic sabbatical at Stanford University in California in 2006.

Victims of crime can simply map and report crimes using the website, which uses brightly coloured drawing pins to indicate where a cluster of crimes has taken place. Site users answer a series of questions on suspects and witnesses. Anyone planning a journey can then easily zoom in on the places where they will go and see the crime profile of that area – and perhaps be more cautious and aware to avoid becoming victims themselves.

Wikicrimes, whose motto is "Share crime information, Keep safe!", began development in April 2006, and went "live" with a launch at the end of 2007. Starting with just two employees, it has now grown to a team of 10.

Brazil's crime problem is huge. Furtado was frustrated with police reluctance to publish crime statistics in Brazil, not letting people know where crimes were taking place. He also believes that the police, as in many other countries, manipulate statistics for various political purposes.



"The traditional mechanism of data-gathering for which police are responsible ends up giving them a monopoly over the handling of information on criminal occurrences," Furtado said. And that "is not always in keeping with the precept of transparency and public availability of information required by a democratic system."

Furtado believes that transparent crime statistics are vital to a well-functioning democracy.

"We are still facing very big challenges," he said. "Cultural change is one of them. We don't have in Brazil the culture of sharing information for benefiting others. People need to realize that when they register a crime, they are helping others, and that should be the reason that others will act in the same fashion."

He tried to get the police involved in the project, by contributing data, but with no luck. Brazil's police argue that their monopoly over crime statistics exists for some very serious reasons. "We are very worried about revealing police data which may restrict the work of the police," **Antenor Martins** of Rio's Civil Police Department told the BBC. "Also we don't want a feeling of insecurity for the people – they

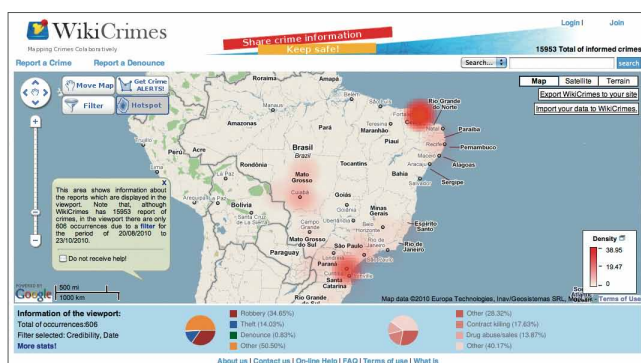
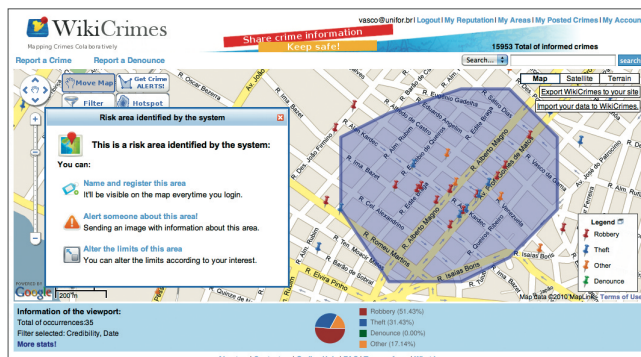
don't deserve that here or anywhere else in the world."

Many also worry about a crime profile of an area dragging the district down, scaring people away. The police also worry about inaccurate information. "When people walk into a police station, you sign an incident report. If you give information which isn't true, you have to respond to charges of giving false evidence," said Martins.

But Furtado believes that trust between citizens and the police is so low that it is hurting the fight against crime.

"The police suffer a lack of credibility among the populace which, in turn, contributes toward the low rate of reporting such occurrences: the so-called underreporting effect," he said. "Research conducted with victims of crime in several Brazilian states has shown that underreporting may, in densely populated areas, reach up to 50 per cent for certain types of crimes."

Furtado believes a better picture of crime will lead to better public policies and policing: "The result of this can be disastrous in terms of formulation of public policies and especially in the planning of police actions, in view of the fact that the



The Wikicrimes engine tracks crimes as they are reported

official criminal mapping may reflect a trend that is quite unlike what is actually occurring in real life.

"WikiCrimes intends to change the traditional logic of handling information on crimes that have already occurred, and it considers that such a change is up to the citizens themselves. It is based on the principle that with adequate support, citizens will be capable of deciding how and when historical information on criminal occurrences can be publicized as well as for what purpose."

Sao Paulo-based NGO **Sou de Paz** works to reduce violence in Brazil and is a big supporter of Wikicrimes. "If we develop Wikicrimes, we can look at things like domestic violence or information on drug trafficking – things that

affect communities but that people don't report either because of shame or fear," the group's **Denis Mizne** told the BBC. "If you can get access to this information or publicize it together with Wikicrimes, it could help in areas that suffer most from violent crime."

Wisely, Wikicrimes is acting to address police concerns over accurate reporting of crimes.

"Technically the big challenge is to define mechanisms to identify false registering," Furtado said. "We are creating fields in WikiCrimes for the user to provide further information that brings more reliability to the crime information registered — links to newspapers, for instance. We are also defining algorithms to compute the reputation of the informants."

And Wikicrimes is not just for Brazil: they want people from around the world to add to the site and help build up the crime profile of all countries.

Furtado said responses from the general public have largely been positive. "The best I could ever hope," he said. "The project is for the citizen and I feel that they realize this. Every day, I receive messages from people offering support and giving congratulations."

Furtado keeps a rolling report on progress with Wikicrimes on his blog.
– (May 2008)

- **Wikicrimes:** Professor Vasco Furtado gives a video presentation of Wikicrimes.
Website: youtube.com/watch?v=cmNww_pi-c&feature=related
- **Ushahidi:** A Kenyan website where people can send in live reports by the web and mobile phones on political violence.
Website: ushahidi.com
- Read more about Professor Vasco Furtado.
Websites: mentores.com.br/vasco and vfurtado.blogspot.com
- **Mashups.com** has the latest news and links to get involved in this new Internet phenomenon.
Website: mashups.com
- **Web 2.0:** An excellent set of links to Web 2.0 tools and which ones are free.
Website: directimpactnow.com/leadgentools/web2-tools-directory.html
- **The United Nations Office on Drugs and Crime:** an excellent resource on trends and statistics.
Website: unodc.org/unodc/index.html

Technological Innovation Alive in Brazil

The growing digital economy in the global South is giving rise to a new generation of entrepreneurs and innovators. A University of California paper by **Naazneen Barma** found explosive potential in poorer countries to innovate and challenged the view of developing countries as passive market places for products innovated in the industrialized world. She said that “in terms of their market power and their production and innovation possibilities, emerging economies are positioned to increase their presence in the digital era ... poor consumers are increasingly driving modular innovation in production technologies, business models, organizational management, and marketing and distributional strategies.”

It has been estimated that the number of people with the equivalent to US \$10,000 in annual income will double to 2 billion by 2015, creating hundreds of millions of new consumers for digital products.

Two cutting-edge innovators from Brazil are tapping into this growing market. Both **FunStation** and **Zeebo** have developed technology specifically wrapped around the needs of Southern consumers and are growing across the South as a result.

FunStation’s (funstation.com.br/blog.php) simple motto – “Touch - Get - Enjoy” – hides a savvy technological innovation aimed at the growing army of digital downloaders on the march across the South. Sao Paulo’s FunStation entertainment kiosk system serves up video, audiobooks, songs, and ringtones to mobile phones and MP3 (en.wikipedia.org/wiki/MP3) players. Customers just need to plug into one of the large futuristic white kiosks, scroll through the choices, select what they want, pay and download. By going to the kiosk, customers avoid the need to download from the Internet, which can take a lot of time depending on the connection and bandwidth. The kiosk is speedy, with 14 musical tracks downloaded to a device in 10 seconds.

Apart from the convenience and speed of the kiosks, customers also have other benefits: they do not need to register with a download site like iTunes on the Internet. This means that they do not have to run the risks of giving away bank details or other personal information.

Customers buy something called a Funcard, which is similar to a pre-pay plastic phone card, with a PIN number. Cards are sold with values ranging from US \$2 to US \$50. The user just punches the number into the kiosk to pay for the download.

The kiosks are being located in high-traffic places such as festivals, airports, universities, retail shopping centres and transport systems.

Founded in 2007, the company is a partnership between **Bruno de Marchi**, 35, computer science student **Armando Perico**, 24, and 60-year-old **Marcos Maynard**. The company already has the rights to sell half a million items and has 55 kiosks operating in Brazil, mostly in the country’s north.

The FunStations have also been successful outside of Brazil: 50 kiosks were sold to Mexico in March. It is launching in Chile later this year and in the United States in 2011.

Another Brazilian technology pioneer is Zeebo (zeeboinc.com). The brainchild of **Reinaldo Normand**, 34, Zeebo is a game-playing console that doesn’t require a CD or DVD or connection to landline Internet. It downloads games directly from remote servers using wireless 3G technology (en.wikipedia.org/wiki/3G) embedded in the console. It exploits the fast-growing penetration of mobile-phone wireless networks across the South to download the games on to the consoles.

It has its eyes firmly on the global South’s rising middle-class families, who will use the consoles for game-playing and educational applications. It is currently available in Mexico and Brazil and is preparing to roll out across Asia. Normand studied at Tectoy S.A. in Sao Paulo, Brazil, and is a life-long gamer, entrepreneur, journalist and forward thinker. He conceived of a new 3D system for the developing world and contacted American company Qualcomm. He partnered with **Mike Yuen** at Qualcomm in San Diego, California, who was exploring new forms of gaming using innovative technologies.

As Zeebo’s mission states, it is “tailored specifically to the economics and market realities of emerging economies. The Zeebo system fills an enormous unmet need in these regions. At the same time, it opens an immense new market for interactive content and products.”

Normand is ambitious and wants to reach a vast market of 340 million Chinese families. “By 2011, I want to close deals in China to manufacture televisions with this technology built in, therefore entering the homes of millions of families,” he told *Monocle*.

Zeebo makes some games for the console and also buys in other games from big-name game makers like Electronic Arts and Activision. The games are downloaded from the Internet using a 3G mobile chip already built into the consoles. The games are priced between US \$5 and US \$13.

The Zeebo system will roll out in China, the US and India in 2011 and Eastern Europe in 2012. – (August 2010)

•**AfricaUnsigned:** This African alternative way of producing African music started this year. Unsigned artists record their music, funded by fans. Music fans from all over the world listen to the selection of artists, pick their favorite(s) and chip in a minimum of \$1 dollar to the recording of a professional EP. The music is then distributed to the fans who backed the artist and sold on all major online stores (incl. Amazon & iTunes). **Website:** AfricaUnsigned.com
 •**TechMasai:** Pan-African start-up news and reviews. **Website:** techmasai.com
 •**“The Emerging Economies in the Digital Era: Market Places, Market Players, and Market Makers”** by Naazneen Barma, University of California. **Website:** tinyurl.com/3xf2ps

Record-breaking Wireless Internet to Help Rural Areas



Many initiatives seek to bring inexpensive access to the Internet to rural and remote regions around the world. One of the most successful ways to rapidly expand access is to offer wireless Internet so that anyone can use a laptop computer, a PC or a mobile phone to connect to the Internet. Access to wireless Internet is being rolled out in cities around the world with so-called “hot spots”, but the thornier issue of improving access in rural or remote regions could find a solution, thanks to a Venezuelan team.

Led by **Ermanno Pietrose-moli**, president of the Latin American networking association **Escuela Latino-americana de Redes**, it has broken the world record for unamplified broadcasting of a WiFi (wireless Internet) signal. The signal was broadcast in June 2007 from two mountains 282 kilometres apart in the Venezuelan Andes. Importantly, they did this using equipment costing just over US \$360 while producing a signal strong enough to send video messages. The former record was 220 kilometres set in 2005.

The consequence of this achievement for entrepreneurs is important: It means inexpensive wireless signals

can now reach further into remote and rural regions for a small investment.

“We were able to transmit voice and video with both,” said Professor Pietrose-moli. “Two hundred and eighty kilometres is pushing the envelope, but the same technique can be used at distances of some 150 kilometres by people with some basic training provided there is uninterrupted line of sight between the end points.”

Pietrose-moli is willing to train people in the techniques that he has developed for transmitting wireless over large distances.

The advantages of this approach include cost and sim-

plicity. The more commercial WiMax technology costs more and is usually installed by large companies. Pietrose-moli’s technique is for people who lack those technical and financial advantages.

“I have been installing wireless networks for some 20 years,” he said, “and reckon that wireless is the only viable alternative to ameliorate the digital divide in developing countries. For rural areas, the challenge is to use as few repeater sites as possible, as each repeater adds costs, delay and powering issues.” – (July 2007)

- **Wireless Networking in the Developing World:** A Practical Guide to Planning and Building Low-cost Telecommunications Infrastructure.
Website: wndw.net
- **World Information Society Report 2007:** A progress report on pledges to bring digital opportunity to all.
Website: itu.int/osg/spu/publications/worldinformationsociety/2007/report.html
- **The Wireless Geographic Logging Engine:** This is a website with maps tracking the presence of WiFi access around the globe. So far it maps over 10 million separate WiFi networks. Entrepreneurs only have to log onto the website to start searching for wireless networks near them.
Website: wigle.net

Web 2.0 to the Rescue!

Using Web and Text to Beat Shortages in Zimbabwe

WEB SHOP TEXT BUY

The beep-beep of a received text on a mobile phone is now becoming a much-needed lifeline to Africans. Zimbabweans, who continue to struggle every day with hyperinflation, have used African ingenuity and 21st-century technology to survive another day.

New website services have become a literal lifeline for millions suffering from economic and social hardships. Several web-based services have stepped in to link expatriate Zimbabweans working outside the country with their relatives back home. All share a common service: people can log into the websites and shop and select what they would like to purchase or transfer to their relatives. Once a purchase has been made, a message is sent by mobile phone text to Zimbabwe, either transferring money credits or credits for fuel, food or medical services.

Mukuru.com is the most elaborate and ambitious of the services and is expanding across Africa (currently in Zimbabwe and South Africa, it is expanding to Kenya, Malawi and Zambia). Started in 2006, it surpassed 1,200 orders per month by 2007, ranging from money transfers to fuel and digital satellite television subscriptions. A voucher number sent by mobile phone also allows the recipient to swap a PIN (personal identification) number for coupons redeemable at certain garages.

One of the great advantages of this new technology is its ability to give real-time updates and tracking throughout the transaction. Senders

are informed about every stage of the transaction, right up until the gas is gushing into the car's tank.

"Basically anybody who is able to work will do his/her best to support family back home," said Mukuru's UK-based **Nix Davies**. "Mukuru's birth is the result of our inability to sit back and watch as well as the desperate need to help those back home. The power of an instant SMS being able to provide value to its recipient is inspiring.

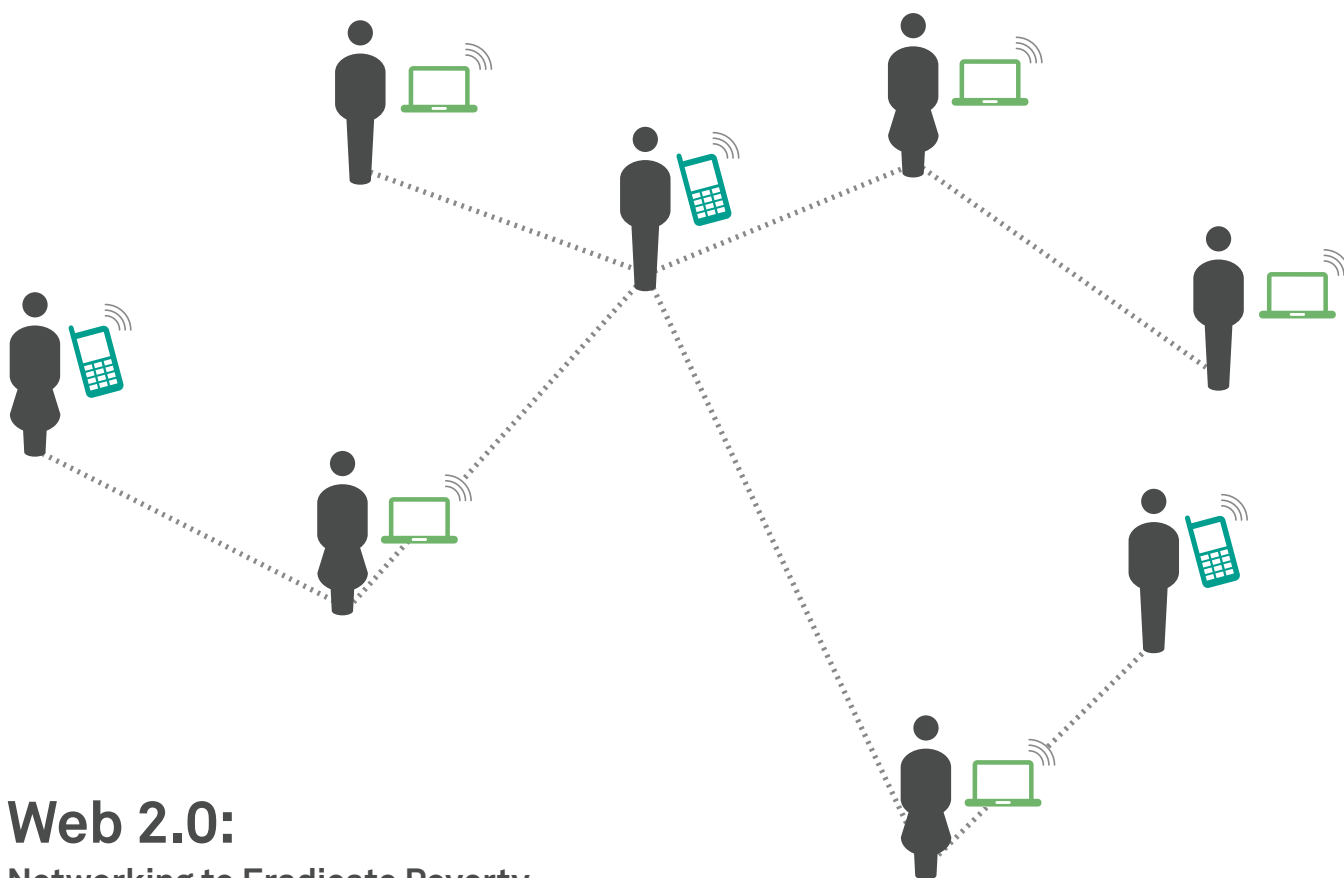
"Launching Mukuru.com has not been without its hurdles," said Davies. "Promoting a brand with one foot in the first world and having to deal with third-world inconsistencies are always challenging." Mukuru also has plans to expand into travel, freight, mail (letters are printed out and sent within Zimbabwe), and music to help local musicians.

Over at another website, **Zimbuyer.com**, expatriate Zimbabweans can buy groceries for their relatives at home and make sure that the money is not spent on the wrong thing.

"There are a lot of people who left Zimbabwe and, for example, have left their children over there," a spokesman told the BBC. "But

sometimes the money they have sent home for the care of the children is diverted into other things. With our service, people buy the stuff – and we deliver them to the recipients so they know what they're buying."

Zimbuyer's website is similar to food shopping websites in developed countries. Prices are listed in British pounds, but the food items are Zimbabwean staples such as sadza maize, Cashel Valley Baked Beans and Ingrame Camphor Cream – all delivered to people living in Harare, Chitungwiza and Bulawayo. Zimbuyer's most popular products are cooking oil and sugar, while "power generators are proving popular because the electricity always goes off nearly every day." – (June 2007)



Web 2.0: Networking to Eradicate Poverty

The Internet phenomenon of Web 2.0 – the name given to the wave of sites such as **YouTube**, **Facebook** and **MySpace** transforming the way people interact with the Internet – has also given birth to two new development-themed social networking websites.

This powerful tool to bring people together is galvanizing the resources of entrepreneurs and those who want to help the poor like never before. The sites are becoming a new weapon in the fight to eradicate poverty.

Social networking websites use various tools and applications (“apps” for short) to enhance the ability of users to connect and get things done. By bringing together a community of like-minded people, they are able to shorten the time that it takes to organize and kick-start events. Web 2.0 can be used to build communities and social and business networks. Being able to store vast quantities of information online makes work faster and reduces the painful delays brought on by slow connections.

All these new tools are making it easier for entrepreneurs to work from home, in Internet centres, or anywhere that there is a wireless connection – and slashing the costs of managing a business. All the applications are online so there is no need to be hidebound by one operating system or hardware capability.

New social networking website **BOP Source** (bop-source.com) hopes to make the money meet the market. Named after the bottom-of-the-pyramid (BOP) concept as conceived by **C.K. Prahalad** – the BOP is the 4 billion people at the base of the global economic pyramid, they represent a vast market of unmet needs for entrepreneurs to tackle.

Started by **Jenara Nerenberg**, BOP Source wants to put social networking tools into the hands of the world’s poor. It is a place to post business ideas and collaborate with others to make them

happen. It is also a tool to educate businesses about the BOP and what the poor need done. And it hopes to help NGOs to broaden their relationships with their constituencies and companies.

While marketers can learn about the needs of the BOP, individuals can directly express their needs on the website and seek out the right people to solve problems. – (November 2008)



Mobile Phones

Mobile Phones Boost Income

Google Android: Android is a software for mobile phones that allows people to create useful applications (apps) for the phones.

Website: code.google.com/android and android.com

Kabissa: Space for Change in Africa: An online African web community promoting and supporting the transition to Web 2.0 services in Africa. Offers lots of opportunities to meet people throughout Africa and learn more.

Website: kabissa.org

Business Fights Poverty: Business Fights Poverty is the free-to-join, fast-growing, international network for professionals passionate about fighting world poverty through good business.

Website: businessfightspovetry.ning.com

BOP Source is a platform for companies and individuals at the BOP (bottom of the pyramid) (en.wikipedia.org/wiki/Bottom_of_the_pyramid) to directly communicate, ultimately fostering close working relationships, and for NGOs and companies to dialogue and form mutually valuable public-private partnerships that serve the BOP.

Website: bopsource.com

A Snapshot of Mobile Phone Innovating Across the South

Twitter: A way to communicate linking mobile phone communications of up to 140 characters with the web. These free applications help users to set up the service and link with all their other Internet applications.

Website: twitter.pbwiki.com/Apps

Textually.org: A very inspiring Website profiling loads of innovations with mobile phones in the developing world.

Website: textually.org/textually/archives/cat_mobile_phone_projects_third_world.htm

Mashable: Over 20 tested mobile Internet phone applications that are useful and easy to use.

Website: mashable.com/2008/01/02/20-mobile-Internet-applications

SME Toolkit: A free online resource aimed at the South to help entrepreneurs and small businesses access business information, tools, and training services to be able to implement sustainable business practices.

Website: smetoolkit.org

African Technology Tackles Health Needs

mpedegree uses cell phones to build networks to tackle and identify counterfeit drugs.

Website: mpedegree.net

AirStrip Technologies: Securely sends vital patient information electronically to a doctor's mobile phone device.

Website: airstripstech.com

Instant ECG: Uses the iPhone to interpret ECG (electro-cardiogram) waves.

Website: instantecg.org

iStethoscope: An application for the iPhone that turns the phone into an electronic stethoscope. Downloaded already by over 3 million doctors around the world, it is being praised for how it helps doctors in remote regions.

Website: itunes.apple.com/us/app/istethoscope-pro/id322110006?mt=8

OsiriX: An Open Source programme for computers and devices allowing doctors to stream medical imaging data live.

Website: osirix-viewer.com

Star Analytical Services: Have developed an app that allows patients to cough into a phone and receive a diagnosis.

Website: staranalyticalservices.com

Bangladesh's CellBazaar: Giving the Poor New Market Tools

SME Toolkit: A free online resource aimed at the South to help entrepreneurs and small businesses access business information, tools, and training services to be able to implement sustainable business practices.

Website: smetoolkit.org/smetoolkit/en

Textually.org: A very inspiring Website profiling loads of innovations with mobile phones in the developing world.

Website: textually.org/textually/archives/cat_mobile_phone_projects_thir

The Innovative use of Mobile Applications in the Philippines: Lessons for Africa: A paper from the Swedish

International Development Cooperation Agency (Sida) on mobile phone innovation.

Website: sida.se/sida/jsp/sida.jsp?d=118&a=33306&language=en

Connecting Farmers and Villages with Technology

Afriville is a Web 2.0 service and an African-Caribbean social network.

Afriville is a community Website along the lines of the famous MySpace. Users are free to message and post profiles. The difference is that the user is able to choose how closed or open the networks are. The site features a state-of-the-art music management system which allows African and Caribbean artists to get directly in touch with their fans.

Website: afriville.com

Business Action for Africa: Business Action for Africa is an international network of businesses and business organizations from Africa and elsewhere, coming together in support of three objectives: to positively influence policies for growth and poverty reduction, to promote a more balanced view of Africa, and to develop and showcase good business practice in Africa.

Website: businessactionforafrica.org

Model Village India: An innovative concept to rejuvenate India's villages and build economies and self-reliance.

Website: modelvillageindia.org.in/index1.html

Indian Traffic Gridlock Gets Entrepreneurial Solution

CommuteEasy is India's largest carpool network with 15,243 active users. It uses a unique blend of advanced search techniques and social networking to provide the most relevant results.

Website: commuteeasy.com

Another Indian car pooling business allows people to post requests for rides on an Internet bulletin board.

Website: carsalesindia.com

SENSEable City: A project at the Massachusetts Institute of Technology's SENSEable City Laboratory to use the new generation of sensors and hand-held electronics to change how cities are understood and navigated. This includes creating real-time maps of cities that can then be used to help with avoiding traffic congestion and other problems.

Website: senseable.mit.edu

Read more about India's traffic congestion problem by India's only science and environment biweekly online newsletter, *Down to Earth*.

Website: downtoearth.org.in

Other Indian car-pooling initiatives.

Websites: indimoto.com, carpooling.in and carpool.in

Crowdsourcing Mobile Phones to Make the Poor Money

Entrepreneurial Programming and Research on Mobiles: EPROM, part of the Program for Developmental Entrepreneurship within the MIT Design Laboratory, aims to foster mobile phone-related research and entrepreneurship. Key activities include development of new applications for mobile phone users worldwide.

Website: media.mit.edu/ventures/EPROM/index.html

Entrepreneurs can track the growth of the mobile phone market here.

Website: wirelessintelligence.com

SMS Bootcamp: The "SMS Boot Camp" at the University of Nairobi, is a project-based course enabling teams of students to launch and market their own SMS services to the millions of mobile phone users in Kenya. A small amount of seed funding will be available to the best teams interested in turning their project into a commercial venture.

Website: media.mit.edu/ventures/EPROM/entrepreneurship.html

Crowd-sourcing on Mobile Phones in the Developing World: Watch a YouTube talk by Nathan Eagle on how this works.

Website: youtube.com/watch?v=lvz2foChQYU

Mobile Active.org is a community of people and organizations using mobile phones for social impact. They are committed to increasing the effectiveness of NGOs around the world who recognize that the 3.5 billion mobile phones provide unprecedented opportunities for organizing, communications, and service and information delivery.

Website: mobileactive.org

M-Banking: Leading the Way on Application Innovation

Twitter: A way to communicate linking mobile phone communications of up to 140 characters with the web. These free applications help users to set up the service and link with all their other internet applications.

Website: twitter.pbwiki.com/Apps

Textually.org: A very inspiring Website profiling loads of innovations with mobile phones in the developing world.

Website: textually.org/textually/archives/cat_mobile_phone_projects_third_world.htm

Over 20 tested mobile internet phone applications that are useful and easy to use.

Website: mashable.com/2008/01/02/20-mobile-internet-applications

DIY Solution Charges Mobile Phones with Batteries

Women of Uganda Network: An NGO initiated by women's organizations in Uganda to develop the use of ICTs among women as tools to share information and address issues collectively.

Website: woungnet.org/cms/index.php

Textually.org: A very inspiring Website profiling loads of innovations with mobile

phones in the developing world.

Website: tinyurl.com/bpo9kr

Mobile Applications Market: Opportunities for South

Mobile Active: MobileActive.org connects people, organizations, and resources using mobile technology for social change.

Website: mobileactive.org

Android: Apps and tools for download.

Website: android.com

The Innovative Use of Mobile

Applications in East Africa by Johan Hellström.

Website: upgrade.files.wordpress.com

PDF: upgrade.files.wordpress.com/2010/06/sr2010-12_sida_hellstrom.pdf

Women and Mobile: A Global Opportunity: A Study on the Mobile Phone Gender Gap in Low and Middle-Income Countries.

Website: mobileactive.org

PDF: mobileactive.org/files/file_uploads/women_and_mobile_a_global_opportunity.pdf

New Technologies in Emergencies: The Role of Information and Social Networks by the United Nations Foundation and Vodafone Foundation Technology.

Website: unfoundation.org/press-center/publications/new-technologies-emergencies-conflicts.html

Two Kenyan Engineering Students Amaze with Inventions

Entrepreneurs can track the growth of the mobile phone market here.

Website: wirelessintelligence.com

SMS Bootcamp: The "SMS Boot Camp" at the University of Nairobi, is a project-based course enabling teams of students to launch and market their own SMS services to the millions of mobile phone users in Kenya. A small amount of seed funding will be available to the best teams interested in turning their project into a commercial venture.

Website: media.mit.edu/ventures/EPROM/entrepreneurship.html

Mobile Active.org: MobileActive.org is a community of people and organizations using mobile phones for social impact. They are committed to increasing the effectiveness of NGOs around the world who recognize that the over 4 billion mobile phones provide unprecedented opportunities for organizing, communications, and service and information delivery.

Website: mobileactive.org

Textually.org is the entry point of three weblogs devoted to cell phones and mobile content, focusing on text messaging and cell phone usage around the world, tracking the latest news and social impact of these new technologies.

Website: textually.org

Ushahidi is a website that was developed to map reports of violence in Kenya after the post-election fallout at the beginning of 2008. The new Ushahidi Engine is being created to use the lessons learned from Kenya to create a platform that allows anyone around the world to set up his/her own way to gather reports by mobile phone, email and the web – and map them. It is being built so that it can grow with the changing environment of the web, and to work with other websites and online tools.

Website: blog.ushahidi.com

Google Android: Get inventing! This software enables anyone to start making applications for mobile phones. And it

offers a platform for developers to then sell the applications to others.

Website: android.com

Afrigadget is a Website dedicated to showcasing African ingenuity. A team of bloggers and readers contribute their pictures, videos and stories from around the continent.

Website: afrigadget.com

Ushahidi: Kenyan Application Saves Lives and Inspires the World Pambazuka News Action Alert blog for Kenya updates.

Website: pambazuka.org

Techsoup: Web 2.0 tools that are free and how to use them: an excellent resource from San Francisco's Techsoup.

Website: techsoup.org

Mashups.com has the latest news and links to get involved in this new Internet phenomenon.

Website: mashup.com

Programmable Web: This outstanding Website links to all active mashups on the web by category and gives real-time reports on progress and lots of links and support to get started.

Website: programmableweb.com

Information Technology

ATM Cash Machines for the Poor Unleashing India's Innovation: Toward Sustainable and Inclusive Growth, a report by the World Bank.

Website: web.worldbank.org

The report **Global Savings, Assets and Financial Inclusion** by the Citi Foundation is packed with innovative approaches that are allowing the people at the BOP (bottom of the pyramid) to use their income to build assets and more sustainable livelihoods.

Website: newamerica.net

NextBillion.net: Hosted by the World Resources Institute, it identifies sustainable business models that address the needs of the world's poorest citizens.

Websites: nextbillion.net

Brazilian Solar-powered WiFi for Poor Schools

Wireless Networking in the Developing World: A Practical Guide to Planning and Building Low-cost Telecommunications Infrastructure.

Website: ifap-is-observatory.itk.hu/node/441

World Information Society Report 2007: A progress report on pledges to bring digital opportunity to all.

Website: itu.int/osg/spu/publications/worldinformationsociety/2007/report.html

The Wireless Geographic Logging Engine: This is a website with maps tracking the presence of WiFi access around the globe. Entrepreneurs only have to log into the website to start searching for wireless networks near them.

Website: wgle.net

KyaTera: The KyaTera lab where the technology was developed.

Website: kyatera.incubadora.fapesp.br/portal/research/laboratories/interactive-electronic-media

Computer "Gold Farming" Turning Virtual Reality into Real Profits

Goldfarming paper: The paper in its entirety can be read here.

Website: sed.manchester.ac.uk/idpm/research/publications/wp/di/index.htm

Website: world-of-warcraft-gold.com

Gold Farming: A documentary looking into all aspects of gold farming and its impact.

Website: chinesegoldfarmers.com

Website: vgsummit.com

The Cyber Cities Reader: Stephen Graham, editor, *The Cyber Cities Reader*, Publisher: Routledge, 2003. The first book to bring together a vast range of debates and examples of ICT-based city changes.

Website: books.google.co.uk

Cyber Cities: An Oasis of Prosperity in the South

The **Atlas of Ideas** is an 18-month study of science and innovation in China, India and the Republic of Korea, with a special focus on new opportunities for collaboration with Europe. It is a comprehensive account of the rising tide of Asian innovation. Special reports on China, India and the Republic of Korea, introducing innovation policy and trends in these countries can be downloaded for free.

Website: demos.co.uk/projects/atlasofideas

The Cyber Cities Reader: The first book to bring together a vast range of debates and examples of ICT-based city changes.

Website: amazon.com

Innovation China: A website linking all stories on the fast-breaking world of Chinese innovation.

Website: innovationchina.com

Crowdfunding Start-up Success in Africa

TechMasai: Pan-African start-up news and reviews.

Website: techmasai.com

Kickstarter: This new site allows US artists, journalists, entrepreneurs, explorers and others to raise the funds for their next big idea. Anyone with an idea for a new endeavour can post a description of the project on Kickstarter along with a deadline, a funding goal and incentives to encourage others to pledge financial support.

Website: kickstarter.com

AfricaUnsigned: This African alternative way of producing African music started this year. Unsigned artists record their music, funded by fans. Music fans from all over the world listen to the selection of artists, pick their favorite(s) and chip in a minimum of US \$1 dollar to the recording of a professional EP. The music is then distributed to the fans who backed the artist and sold via all major online stores (including Amazon and iTunes).

Website: AfricaUnsigned.com

Afrinnovator: Is about telling the stories of African start-ups, African innovation, African-made technology, African tech entrepreneurship and entrepreneurs. Their mission is to "Put Africa on the Map" by covering these kinds of stories from all

over Africa. As their website says, "If we don't tell our own story, who will tell it for us?"

Website: afrinnovator.com

The Power of the Word: African Blogging Takes Off

Kwani is a lively Kenyan journal of new and young writers. They also organize regular readings and events in Nairobi.

Website: kwani.org

Dabbawallahs Use Web and Text to Make Lunch on Time

The official website of the dabbawallahs.

Website: mydabbawala.com

Digital Mapping to put Slums on the Map

Mobile Active.org: MobileActive.org is a community of people and organizations using mobile phones for social impact. They are committed to increasing the effectiveness of NGOs around the world who recognize that the over 4 billion mobile phones provide unprecedented opportunities for organizing, communications, and service and information delivery.

Website: mobileactive.org

Google Android: Get inventing! This software enables anyone to start making applications for mobile phones. And it offers a platform for developers to then sell the applications to others.

Website: android.com

Betavine Social Exchange has been launched. It's a matching site for NGOs looking for mobile solutions, and developers who can help build them, all brought to you by Vodafone.

Website: betavine.net

A presentation on the Map Kibera project.

Website: http://www.slideshare.net/mapkibera/ground-truthmapkiberaford

Enormous Potential for Nigerian Software Industry

West Africa Trade Hub: A great resource for doing business in West Africa.

Website: watradehub.com/index.php?option=com_

content&task=view&id=1439

Rogue Economics: A website accompanying the book by Loretta Napoleoni on the illegal economic activities unleashed after the fall of communism.

Website: lorettanapoleoni.com

Towards an African E-Index: SMS e-Access and Usage Across 14 African Countries: A report from 2006 showing how small and medium African businesses increase income with ICTs.

Website: mobileactive.org/research/towards-african-e-index-sms-e-access-and-usage-across-14-african-countries

Changing Dynamics of Global Computer Software and Services Industry:

Implications for Developing Countries: A report from UNCTAD on how computer software can become the most internationally dispersed high-tech industry.

Website: unctad.org/templates/webflyer.asp?docid=1913&intitemid=2529&lang=1

"A Profile of Nigeria's Software Industry" by H. Abimbola Soriyan and

Richard Heeks, Paper No 21, 2004, Development Informatics: Working Paper Series.

Website: tinyurl.com/yh25dpa

Nigeria: A great contact point for finding legitimate software developers in Nigeria.

Website: ispon.org

Poor Villagers Get Custom Web Content

The Wireless Internet Institute was launched in 2001 as an international think tank where stakeholders explore wireless Internet technologies, best practices and sustainable implementation models. W2i is a World Times, Inc. initiative addressing the regulatory, business and integration complexities associated with the deployment of wireless Internet technologies.

Website: w2i.com

The World Dialogue on Regulation for Network Economies is concerned with regulation and governance for network economies. It conducts research, facilitate online dialogue and discussion among experts, and publishes and distributes papers, reports and other relevant information.

Website: regulateonline.org

I-Genius: I-genius is a world community of social entrepreneurs and seeks to inspire a new generation of social innovators. They hope to encourage partnerships across geographical and cultural boundaries by building partnerships between social businesses and wider stake-holders, governments, corporations, NGOs, investors and the media.

Website: i-genius.org

Social Edge: a web portal for social entrepreneurs by social entrepreneurs.

Website: socialedge.org

Haiti Earthquake Prompts Tech Aid SMS activism: A blog report on how people are using SMS text messaging in the developing world.

Website: guardian.co.uk/katine/katine-chronicles-blog/2010/feb/02/mobile-phone-sms-uprising

The Magazine *Popular Mechanics* has excellent resources on how anyone can prepare his/her family and community for disasters.

Website: popularmechanics.com/survival

The US Government has extensive resources online on how to prepare for a wide variety of natural and man-made disasters.

Website: fema.gov/areyouready

UNICEF: Community-Based Disaster Preparedness Projects (CBDPs) in India have been helping communities restructure to survive when disaster strikes.

Website: unicef.org/uk/campaigns

Crisiscommons: How to activate support from the global technology community in a disaster.

Website: crisiscommons.org

Telecoms Sans Frontiers: Focuses on providing communications in the first days after an emergency.

Website: tsfi.org

INSTEDD NGO: INSTEDD's mission is to harness the power of technology to improve collaboration for global health and humanitarian action. An innovation lab for tools designed to strengthen networks, build community resilience and improve early detection and response to major health-related events and natural or human-caused disasters.

Website: instedd.org

Web mash-ups: Programmable Web offers all the resources required to get started.

Website: programmableweb.com



Illiterate Get Internet at Touch of a Button

Photographs of the project launch and the Question Box. **Website:** flickr.com/photos/73495762@N00

Kenyan Farmers Uses Internet to Boost Potato Crop

A blog with news and tips on how to use the social networking tools for business opportunities.

Website: socialnetworking-weblog.com

Four stories on how social networking radically improved business prospects for some people.

Website: bnet.com/2403-13070-23-219914.html

A *Business Week* article on the good and bad of social networking for business.

Website: businessweek.com/smallbiz/content/aug2008/sb2008086_346094.htm

Txteagle: A service in Kenya that is paying people to do tasks and translations with their mobile phones. **Website:** txteagle.com/index.html

Maker Faire Africa: African Ingenuity Sparking Creativity

Fab Labs: Like the futuristic “replicator” in the TV show *Star Trek*, Fab Labs allow people to design and produce what they need there and then. The labs are mushrooming throughout the South as people get the innovation bug. The Fab Lab programme is part of the MIT Center for Bits and Atoms (CBA), which broadly explores how the content of information relates to its physical representation.

Website: fab.cba.mit.edu

id21 Insights: A series of articles by the UK’s Institute of Development Studies on how to make technology and science relevant to the needs of the poor.

Website: id21.org/insights/insights68/art00.html

eMachineShop: This remarkable service allows budding inventors to download free design software, design their invention, and then have it made in any quantity that they wish and shipped to them: Amazing!

Website: emachineshop.com

Red dot: The red dot logo stands for belonging to the best in design and business. The red dot is an internationally recognized quality label for excellent design that is aimed at all those who would like to improve their business activities with the help of design.

Website: red-dot.de

Institute for the Future: It identifies emerging trends that will transform global society and the global marketplace. It provides insight into business strategy, design process, innovation, and social dilemmas. Its website helps budding inventors to identify new areas of invention. **Website:** iftf.org

Making the World a Better Place for Southern Projects

CSR Wire: This is a news service with all the latest news, reports and events and where companies announce their CSR (corporate social responsibility) programmes and how much they are contributing. A great resource for any NGO looking to make a targeted appeal for funds. **Website:** csrwire.com

Alibaba: Alibaba.com is an online marketplace started in China but is now global. It allows businesses from all over the world to trade with each other, make deals and find funding.

Website: alibaba.com

Mongolia Looks to Become Asian IT Leader

Advice on starting a business and succeeding in tough economic times.

Website: businesslink.gov.uk/bdot/action/layer?topicId=1073858805

Changing Dynamics of Global Computer Software and Services Industry:

Implications for Developing Countries: A report from UNCTAD on how computer software can become the most internationally dispersed high-tech industry.

Website: unctad.org/templates/webflyer.asp?docId=1913&intitemId=2529&lang=1

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TechMasai: Pan-African start-up news and reviews.

Website: techmasai.com

New Weapon against Crime in the South

Wikicrimes: Professor Vasco Furtado gives a video presentation of Wikicrimes.

Website: youtube.com/watch?v=cmNwv-pi-c&feature=related

Ushahidi: A Kenyan website where people can send in live reports by the web and mobile phones on political violence.

Website: ushahidi.com

Read more about Professor Vasco Furtado.

Websites: mentores.com.br/vasco and vfurtado.blogspot.com

Mashups.com has the latest news and links to get involved in this new Internet phenomenon.

Website: mashups.com

An excellent set of links to Web 2.0 tools and which ones are free.

Website: directimpacknow.com/leadgentools/web2-tools-directory.html

The United Nations Office on Drugs and Crime: an excellent resource on trends and statistics.

Website: unodc.org/unodc/index.html

Technological Innovation Alive in Brazil

AfricaUnsigned: This African alternative way of producing African music started this year. Unsigned artists record their music, funded by fans. Music fans from all over the world listen to the selection of artists, pick their favorite(s) and chip in a minimum of \$1 dollar to the recording of a professional EP. The music is then distributed to the fans who backed the artist and sold on all major online stores (incl. Amazon & iTunes).

Website: AfricaUnsigned.com

TechMasai: Pan-African start-up news and reviews.

Website: techmasai.com

“The Emerging Economies in the Digital Era: Market Places, Market Players, and Market Makers” by Naazneen Barma, University of California.

Website: tinyurl.com/3xfj2ps

Record-breaking Wireless Internet to Help Rural Areas

Wireless Networking in the Developing World: A Practical Guide to Planning and Building Low-cost Telecommunications

Infrastructure.

Website: wndw.net

World Information Society Report 2007:

A progress report on pledges to bring digital opportunity to all.

Website: itu.int/osg/spu/publications/worldinformationsociety/2007/report.html

The Wireless Geographic Logging

Engine: This is a website with maps tracking the presence of WiFi access around the globe. So far it maps over 10 million separate WiFi networks.

Entrepreneurs only have to log onto the website to start searching for wireless networks near them.

Website: wigle.net

Additional Resources

Mobile Phones

Worldwide Mobile Industry Handbook

2010-2014: A guide to understanding the size, scope and major players of the worldwide mobile industry: 3rd edition.

Website: portioresearch.com/WMIH11-15.html

Mobile Applications Futures 2010-2015:

This new analysis projects that by 2015, over 255 million people worldwide will have downloaded and used mobile applications, which represents about 22 per cent of smart phone users. Meanwhile, revenue from mobile applications (including in-app payments) will grow to over US \$23 billion in less than five years.

Website: generatorresearch.com/productinfo.php?pid=307

Mobile Payments 2010-2014:

Tracks the rapidly evolving mobile payments space. The report examines the worldwide mobile payments market and delivers analysis of mobile payment services including in-app payments, mobile ticketing and mobile coupons, and identifies the opportunities in the mobile-payments space.

Website: portioresearch.com/Mob-payments10-14.html

M-health: DataDyne provides free mobile phone data collection and other technologies to hundreds of non-profits and other organizations working in international development and global health worldwide.

Website: Datadyne.org

Mobile Active: MobileActive.org is a community of people and organizations using mobile phones for social impact delivery. Their website is packed with resources, including case studies and handbooks. They regularly organize events around the world.

Website: mobileactive.org

Google Android: Get inventing! This software enables anyone to start making applications for mobile phones. And it offers a platform for developers to then sell the applications to others.

Website: android.com

World Bank Apps for Development

Competition:

Website: scribd.com/doc/38494855/World-Bank-Apps-Brochure

Internet

BBC interactive map showing the global evolution of the World Wide Web over the past 20 years.

Website: news.bbc.co.uk/1/hi/

technology/8552410.stm

Key Terms and Acronyms

WiFi: Is a trademark of the Wi-Fi Alliance and is not a technical term but is used to define wireless connectivity technologies used to connect to the Internet or mobile phones.

Internet: This is the global system of interconnected computer networks using the common Internet Protocol Suite (IP) addresses to connect users.

World Wide Web (WWW): Also known as the Web, it is the interlinking of documents on the Internet using hypertext links with web addresses (for example, www.undp.org/).

Search engine: This is a way to search for information on the World Wide Web. An example is the most-used search engine Google (google.com).

3G: 3G or 3rd Generation is a generation of standards for mobile phones and mobile telecommunications services fulfilling specifications by the International Telecommunication Union. This includes wide-area wireless voice telephone, mobile Internet access, video calls and mobile TV. To be classified as 3G the device must allow simultaneous speech and data services.

4G: 4G refers to the fourth generation of cellular wireless standards. It is a successor to 3G and 2G families of standards. 1G was analog and 2G was the move to digital technology. 4G services include mobile broadband delivering ultra-fast internet, gaming and streamed multimedia content.

Apps: Apps is an abbreviation for applications. An app is a piece of software. It can run on the Internet, on your computer or on your phone or other electronic device.

Health Advice

Mobile phones are low-powered radiofrequency transmitters, operating at frequencies between 450 and 2700 MHz with peak powers in the range of 0.1 to 2 watts. The handset only transmits power when it is turned on. The power (and hence the radiofrequency exposure to a user) falls off rapidly with increasing distance from the handset. Persons using a mobile phone 30–40 cm away from their body – for example when text messaging, accessing the Internet, or using a “hands free” device – will therefore have a much lower exposure to radiofrequency fields than someone holding the handset against his/her head.

In addition to using “hands-free” devices, which keep mobile phones away from the head and body during phone calls, exposure is also reduced by limiting the number and length of calls. Using the phone in areas of good reception also decreases exposure as it allows the phone to transmit at reduced power. The use of commercial devices for reducing radiofrequency field exposure has not been shown to be effective.

Mobile phones are often prohibited in hospitals and on airplanes since the radiofrequency signals may interfere with certain electro-medical devices and navigation systems.

Source: World Health Organization: Electromagnetic fields and public health: mobile phones.

For more information and health advice, see who.int/mediacentre/factsheets/fs193/en/

NEXT ISSUE OF SouthernInnovator

YOUTH AND ENTREPRENEURSHIP

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GOALS



1.7 billion Internet users

349 million African youth ages 15 to 24 by 2050

90% of the world's population covered
by mobile cellular network



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